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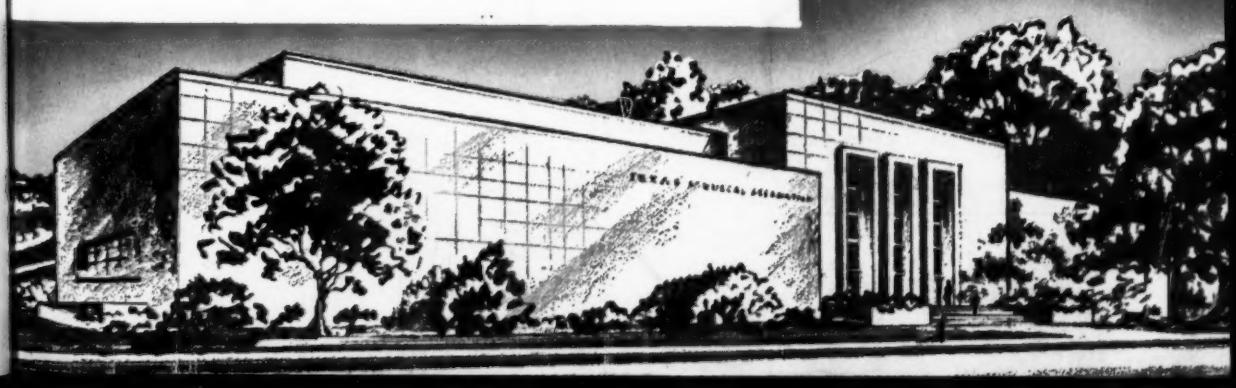

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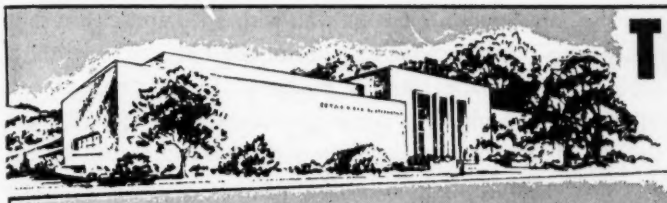

TEXAS State Journal of Medicine

DEVOTED TO THE INTERESTS OF THE MEDICAL PROFESSION AND PUBLIC HEALTH IN TEXAS

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GROUP INSURANCE—A SERVICE FOR MEMBERS

It is a recognized fact that group insurance provides more coverage for less money than any insurance available (the cost is 30 to 50 per cent less than comparable coverage on an individual basis, depending on age) and the Texas Medical Association is always on the lookout for ways to serve its members. With this in mind, a true group disability insurance program is being made available for all Association members up to the age of 70 years regardless of their present physical condition or past medical history. The plan selected for sponsorship by the Association from ten proposals underwritten by reputable insurance companies—that of the Lumbermen's Mutual Casualty Company to be administered by the Charles O. Finley Company, the largest administrator of professional group insurance programs in the United States—will give every participating member maximum benefits from every dollar invested.

The Texas Medical Association is the first state medical group to secure lifetime benefits for accidents and ten-year benefits for sickness; most other medical plans offer only five-year benefits for accidents and two or three-year benefits for sickness. In addition, the program is flexible enough to provide each participating physician with a choice of three plans from which to select the coverage best suited to his needs, either immediate coverage, 30-day waiting period, or six-month waiting period. Each of the three plans pays from $50 to $150 weekly during a period of disability resulting from an accidental bodily injury or sickness and includes a $5,000 accident death benefit.

Although certificates of insurance will be sent to each member insured under the plan, a master policy is being issued to the Association. The Board of Trustees, which has withdrawn endorsement of the Metropolitan Casualty Insurance Company policy written through the Sid Murray Agency, will control the program for the protection of the participants. Much of the groundwork for the Association's program was laid by the Council on Medical Economics.

A brief announcement of the availability of the plan was sent early in October to each member, and a brochure explaining the program in complete detail accompanied by an application is to be forwarded by the end of the month. Each physician is urged to give the plan his careful consideration, for it is hoped a large percentage of the membership of the Texas Medical Association will want to take advantage of this additional service to them.

THE SANCTITY OF DISSENT

"One of the central differences between ourselves and our communist adversaries is that our traditions commit us to belief in the utility, indeed the sanctity, of dissent, while theirs do not. Ours is a democracy with faith in the freedom of men and faith that out of unfettered dissent and diversity will come progress."

So wrote former United States Senator William Benton of Connecticut recently.*

Appreciation of this fact was evident in some of the advice given by Leo E. Brown, director of public relations for the American Medical Association, at the public relations conference sponsored by the Texas Medical Association in Austin last month. Mr. Brown pointed out the necessity of making a distinction between poor public relations and honest difference of opinion and urged his hearers to respect the rights of others to disagree. He went on to emphasize that the medical profession should continue to express itself on all measures affecting the health of the American people and that "whenever the AMA abandons principle for the lure of the popularity poll, it will have abdicated its position of trust, responsibility, and leadership in the medical affairs of the nation."

One of the criticisms leveled at the medical profession by those who are not physicians is not that doctors have strong opinions about every aspect of medicine and health, however remote, but that they are hesitant to grant the soundness of alternative opinions, regardless of the ability, experience, and concern of the non-medical persons who with good conscience cannot accept every dot of the *i* and cross of the *t* of the medical position. Indeed, one of the complaints some physicians voice toward their own organizations is that only those in the inner circle are encouraged to speak their piece and that once an official viewpoint has been stated, those who disagree are ignored.

Whether or not the aforementioned criticisms are valid may be a moot point. Nevertheless, the danger that in this period of tension, intolerance of differing opinions may exist is ever present and should be guarded against. It is unnecessary to repeat Voltaire's famous affirmation in this connection, but perhaps some contemporary statements would be apropos:

"It . . . is by the free exchange of ideas and the testing of them that we produce the good and fine things of life. There is no value in refusing to examine an idea of another or in charging him with evil motives simply because we do not share his point of view. Equally it is mistaken to declare that because a person is willing to examine an idea he necessarily must support it. . . .

"[One of America's most valuable assets is its voluntary associations, which] have a responsibility to conduct their business in the spirit of good will and democratic procedures. . . . It is tragic indeed when any great national association representing a large number of good Americans yields to the pressures of fear and repression. . . . If our voluntary associations heighten their respect for the rights and freedoms of others, if government conducts its affairs honestly and fairly and respects the dignity and worth of the individual, fear will not shape public attitudes. As is always the case in the United States, our nation reflects our own image and although institutions must share the responsibility, in the last analysis the power of decision rests with the individual."

Mrs. John G. Lee, president of the League of Women Voters of the United States, had those things to say to the Constitutional Rights Subcommittee of the Senate Judiciary Committee.†

Doctors of medicine by nature, training, and vocation are individualists. As such, they should be champions of the dissenter, eager to defend

*Dare To Be Different, Family Weekly Magazine, Oct. 2, 1955, p. 6.

†A Petition for Redress of Grievances, National Voter, Washington, D. C., League of Women Voters of the United States, Sept. 17, 1955.

the right of another to state his case, ready to weigh the validity of his argument, and willing to accept truth even though it means modifying their original view. This approach, which in no way need lead to compromise of principle, can result only in a healthier profession and greater respect from the public.

TEXANS TO BE HOSTS

For the fifth time, Texas physicians will be hosts to members of the Southern Medical Association, which will meet in Houston from November 14 to 17. As hosts, Texas doctors will have an excellent opportunity to extend outsized Texas hospitality to visiting medical men from 16 other member states, and to take advantage of Southern Medical's outstanding scientific program. General practitioners and specialists alike will find some part of the program of interest to them.

Former Texas meetings of this regional society have been held in Dallas in 1915, 1925, and 1951, and in San Antonio in 1934. Three distinguished Dallas physicians have served as presidents of the organization: Dr. E. H. Cary, 1920; Dr. Hugh L. Moore, 1934; and Dr. Curtice Rosser, 1951.

Dr. Denton Kerr, Houston, is chairman of the General Committee on Arrangements this year. Dr. Milford O. Rouse, Dallas, President-Elect of the Texas Medical Association, is chairman of the Council and also of the Membership Promotion Committee for Texas.

Texas can claim the second largest number of members of the Southern Medical Association, having 1,016 out of the 8,934 total membership on October 1, 1954, the latest date for which figures are available. However, only 16 per cent of the eligible Texas doctors are members of the organization.

It is certain that the scientific program and fellowship at the forthcoming meeting will be well worth the attendance of those who are able to go.

50 Years Ago

Excerpts from the October, 1905, JOURNAL.

Concerning the eighth revision of the Pharmacopeia which went into effect on September 1, 1905, the JOURNAL stated editorially: "The Pharmacopeia is distinctly a physician's book, originating with the medical profession. . . . It establishes a standard of purity for medicinal drugs, and varies from revision to revision with the demands of the medical profession. It does not distinguish between worthy and unworthy drugs, but enables the apothecary to furnish articles demanded of uniform strength and purity."

It went on to say that "The Eighth Revision was marked by an unexpected conservatism. Indeed, the revisors refused to strike out the last 'o' in pharmacopoeia, the revised spelling adopted by all national pharmacopeias, save one other. . . . The most marked advance in the revision is the adoption of assay methods for alkaloids, insuring standard strengths of tinctures and extracts of such drugs as aconite, cinchona, colchicum, conium, hyoscyamus, ipecac, nux vomica, scopola, pilocarpus, stramonium, etc." Eighteen especially noteworthy changes in strengths of standard tinctures were enumerated.

Under the heading "Knockers" was the following filler item: "Opportunity knocks but once. Other knockers please copy.—*Life.*"

A paper read at the 1905 Association meeting in Houston before the Section on Obstetrics and Diseases of Children brought discussion from more than half a dozen doctors on the question of repair of injuries to the birth canal. The author suggested: "Obstetricians differ concerning vaginal and perineal repairs, some believing we are justified in introducing stay sutures some time during labor; others prefer waiting a short time after the completion of labor, while others think the best results are attained by doing a secondary operation in sixty or ninety days."

Texas medical colleges in 1904 and 1905 enrolled 726 students. "Twenty-two of this number were women and 208 were from other states. . . . In all States there were 1012 medical students enrolled from Texas." These figures included in the October JOURNAL were quoted from the educational number of the *Journal of the American Medical Association.*

"State News" included the following item: "Dr. Leach and His Arsenic Immunity.—Dr. Reginald B. Leach, a homeopath of St. Paul, Minnesota, gave his pictures to the papers and charged on the yellow fever at New Orleans with arsenic. He claimed that 1-100 grain of arsenous acid repeated three times daily would render an individual immune. . . . It develops that this same Homeopathic Leach was once a resident of Paris, Texas, and discovered (?) in 1892 that this same arsenic treatment *cured* cholera!" Local medical society officials called his bluff, and "Dr. Leach has retired from the field, leaving his undying glory in the back numbers of the daily press."

A discussion of "Christian Science" and Mrs. Mary Baker G. Eddy, its founder, covered four and a half pages in the editorial section of the JOURNAL under the following headings: "Emotional Religious Movements," "Texas Victims of Christian Science," "Exposure of Eddyism," "The Real Mrs. Eddy," 'The Theft of 'Christian Science,'" "The Claim of Divine Power," "Mrs. Eddy's Commercial Enterprises," and "'Christian Science' Witchcraft."

ORIGINAL ARTICLES

SEROLOGIC AND IMMUNOLOGIC TESTS FOR CANCER

Present Status and Experience with a Promising Method

J. G. MAKARI,* M. D., Houston, Texas

THE search for a diagnostic serologic or immunologic test for cancer has been, and is still, foremost in the minds of scientists and physicians alike. This is especially so since early treatment and therefore early diagnosis continues to provide the best weapon in the fight against cancer.

Many workers had hoped to find some serologic or immunologic changes which are unique to patients with cancer. In fact, a great many of these have been described but have not proved to be specific to cancer. One look at the Public Health Service monograph[4] on the evaluation of cancer diagnostic tests up to 1953 is enough to prove this point.

The same applies in general to the great majority of tests based on chemical enzymologic and physiologic changes in the body. Although some of these are still useful in differential diagnosis and prognosis, none has proved of value for general population screening, that is, in conformity with the requirements set by the workers of the National Cancer Institute[3] that there be no more than 10 per cent false negatives and not more than 5 per cent false positives.

A schematic representation of the different approaches used in cancer detection is shown in figure 1.

Although the morphologic methods used, including the comparatively new method of Papanicolaou, still provide the basis of diagnosis, they have many drawbacks. Aside from its requirements for highly skilled personnel, the Papanicolaou technique is useful only in those lesions where the cells can be scraped from the surface or that are freely accessible to liquids which can wash away desquamated cells and bring them within the reach of the examiner.

The need is therefore great for a specific test for the detection of all types or any given type of cancer which would utilize a more general common characteristic of neoplasms and which could be applied to the blood or body secretions.

SEROLOGIC TESTS

On the whole the serologic methods used have not proved to be specific enough for diagnostic purposes. Wynne and others[13] have evaluated the use of the Kahn universal reaction as a diagnostic aid and reported that such a reaction has no significant value in diagnosis.

The use of the serial cephalin flocculation test[8] was evaluated in 152 cases[9] with the idea of finding a characteristic pattern in cancer. These results revealed no statistical differences between patients with cancer, normal patients, and patients with other diseases. In one tube there was a significant difference between cancer cases and normals, but not between cancer cases and other diseases.

A preliminary attempt also was made to evaluate the effect of preinactivation of serums on Hanger's cephalin test in 44 cases.

It was found that the percentage of negative reactors (0 to 1 plus) was 75 per cent in normals, 38 per cent in other diseases, and 20 per cent in cancer cases. Although a trend was apparent from these preliminary findings, it was evident also that such a test could not be used for diagnosis.

Attempts to use electrophoretic studies of plasma proteins and nitrogen and lipid analysis of plasma fractions have revealed no characteristic deviations from other diseases, except in multiple myeloma.

Among these newly described tests the value of which was not confirmed by other workers are the following:

1. The Bolen test, using blood pattern noted in a drop of blood.

2. The Black-Kleiner-Bolker test, whereby a long dye reduction time was noted in malignant cases when heated with methylene blue.

3. Menke's reaction, where "Pentolytic" power of cancer serum was found greater than that of normal serum.

4. Huggin's test based on thermal coagulation of serum proteins, which seems to be one manifestation of reaction of host to noxious stimuli since ACTH administration and surgery with or without cancer influences the outcome of the test.

5. The test Hall, Penn, and their associates[5] described resulting in the flocculation of serums from cases with malignant neoplasms upon the addition of an unsaponifiable fraction obtained from human cancerous livers. This gave a 2 per cent positive test in

Read before the Section on Internal Medicine, Texas Medical Association Annual Session, Fort Worth, April 26, 1955.

Immunologist, M. D. Anderson Hospital for Cancer Research, The University of Texas, Texas Medical Center.

healthy persons and 90 per cent in cases of malignancy. One difficulty with the acceptance of such a test by many immunologists is the absence of a plausible explanation for the underlying mechanism immunologic principles rather than on specific serologic phenomena is expected to give the answer.

The optimism behind these attempts, as Hauschka puts it,[6] is based on the immunologic specificity of certain normal tissues, on the demonstration of "specific" antibodies evoked by transplantable tumors,

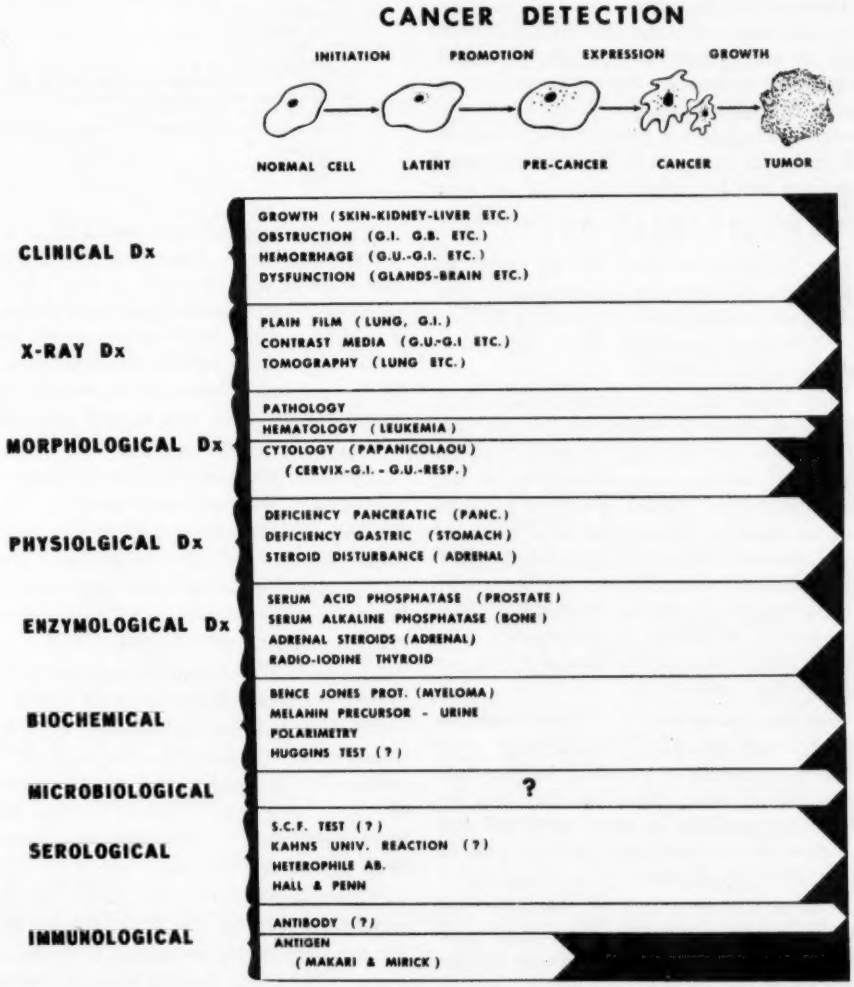

FIG. 1. A schematic representation of the different approaches to cancer detection as related to the stage of neoplastic process.

as well as the failure of other flocculation tests to meet the necessary requirements.

IMMUNOLOGIC TESTS

Arguments in favor of immunologic diagnosis are strengthened by the continued failure of physicochemical analysis in differentiating between even antigenically distinct entities such as the human blood group substances A and B.

The search, therefore, for a test based on specific and on the antigenicity of some neoplastic viruses and of carcinogen-protein conjugates.

Previous immunologic attempts, however, were directed towards detection of antibodies, a hang-over from the early days of bacteriology. This presupposed that the antigen stimulates in all cases antibodies detectable by our present methods. Such an approach ignores the possibility that in cancer the host might consider the cancerous tissue as "self," in accordance with Burnet's theory,[1] and therefore might not react

by producing antibodies or that perhaps even if such an antigen is brought to the attention of the host by the help of adjuvants, there might be formed only univalent antibodies, which are not detectable by the usual immunologic methods of precipitation, complement fixation, and so forth.

Another difficulty is the fact that with those tests utilized in the past, it has been extremely difficult, if not impossible, to separate normal tissue antigens from specific neoplastic antigens.

This probably explains why previous results with detection of antibodies in man have been disappointing.

Then why not look for antigen instead of antibody?

SCHULTZ-DALE TEST

It has been found by Schultz[12] and by Dale[2] that intestine or uterus of a sensitized guinea pig removed from the body and suspended in oxygenated Ringer's solution will contract maximally when exposed to even small amounts of antigen.

It has been found that an antibody which reacts demonstrably, but does not precipitate, may be present in some serums and that such antibody might be able to sensitize. Furthermore, differences in the ability of antibodies of different species to fix complement or to sensitize guinea pigs have been described by Kabat and Mayer. Kabat and Landow[7] have reported that an isolated guinea pig uterus will contract even though containing amounts of antibody nitrogen not exceeding .01 microgram. This reaction is, therefore, much more sensitive than any in vitro immunologic method.

These considerations make the Schultz-Dale test the test of choice for detection of antigens not only for its technical soundness as a specific immunologic test but also for its great sensitivity. Its value has been confirmed by its ability to detect rickettsial antigen and antigen in the serums of patients with infective hepatitis and homologous serum jaundice.

In a preliminary communication[10] the use of the Schultz-Dale test for the detection of a soluble carcinoma antigen has been described. A more detailed report[11] describing the detection of specific antigen in the serums of patients with carcinoma by use of the Schultz-Dale test is in press.

Essentially, the method used was as follows:

Virgin female guinea pigs were immunized to antigens prepared from carcinomatous tissues by the help of Freund's adjuvants. After four weeks, the guinea pigs were killed by a blow on the head and their uterine horns were removed and tested in a Schultz-Dale bath (table 1) in the presence of Tyrode's solution through which was bubbled a mixture of 95 per cent oxygen and 5 per cent carbon dioxide and which was immersed in a water bath maintained at 37.5 C. plus or minus .5 degrees.

Uterine contractions were recorded by an ink marking tip on paper used in recording basal metabolic rates mounted on a rotating kymograph.

TABLE 1.—*Schultz-Dale Apparatus as Modified for Use in This Work.*

A.	Water bath at 37.5 C.
B.	Tyrode reservoir.
C.	Schultz-Dale bath.
	1. Uterine horn.
	2. Glass rod for attachment of lower end of horn.
	3. Needle for bubbling 95% oxygen and 5% carbon dioxide.
D.	Test tube holder.
E.	Sterile test tubes with serum or plasma to be tested.
F.	Kymographs
	1. B.M.R. paper.
	2. B.M.R. ink tip.

A normal uterine horn was used as a control for the sensitized horn. A negative plasma from a healthy blood donor was also used as was a positive serum or plasma from a known case. Any serum which gave a positive reaction with the sensitized horn but not with the normal horn was considered positive, so long as the sensitized horn did not react with normal serum but did react with known positive serum.

Results of the Schultz-Dale test on serums from 537 persons are shown in table 2. When antigens A and B, that is, when large particles were included, were used to sensitize guinea pigs, the sensitivity was about 84 to 86 per cent, the test being positive in 59 of 70 cases of untreated carcinoma when active sensitization was used and in 18 of 21 such cases when passive sensitization was used.

The incidence of positive reactions among patients from the Cancer Detection Clinic was 6 out of 111 with active sensitization, and 1 out of 26 with passive sensitization. However, the incidence of positive reactions among cases of other diseases was quite high. In this latter group, 19 out of 23 were positive with active sensitization, and 8 out of 25 were positive with passive sensitization.

When antigen C was used, that is, the antigen with small sized particles, the sensitivity and specificity of the test were greatly increased. With the active sensitization technique, the incidence of positive reactors in the definite carcinoma cases was 62 out of 64; in the questionable cancer cases, 3 out of 8; in other tumors, 1 out of 9; and in other diseases, 6 out of 123.

Follow-up of cases with clinical diagnosis of questionable carcinoma is worth referring to. The cases in this group were followed for a period of one year. Of the 26 cases, the 9 with definite pathologic diagnosis by autopsy or biopsy are reported.[11]

On subsequent pathologic examination a diagnosis of carcinoma was not obtained in any of the 4 cases showing a negative test, the pathologic diagnoses be-

ing fat necrosis, lupus erythematosus, hemangiosarcoma, and spindle cell lipofibrosarcoma.

Of the 5 cases with a positive test, 4 proved to be definite carcinoma. The fifth patient had a recurrent papilloma of the bladder which was found at operation five days before the test to be penetrating the bladder wall, suggesting beyond doubt its carcinomatous nature.

The following methods were employed in regard to the reproducibility of the test. Platelet intact plasma from three group O normal blood donors were added together to make a negative carcinoma pool, while platelet intact plasma from 3 patients with untreated carcinoma were also added together to make a positive carcinoma pool. Plasma was then pipetted in 2 ml. amounts into 50 sterile test tubes and given numbers unknown to the person doing the test. Seven were from the carcinoma positive pool and the other 43 were from the normal group O pool. Seven out of 7 of the positives and 43 out of 43 of the negatives were all correctly diagnosed.

Further work is in progress to evaluate on a larger scale the possibility of using this test as an early diagnostic aid in individual cases and in the screening of carcinoma in the general population.

TABLE 2.—*Distribution of Positive Reactors to Schultz-Dale Test Among Untreated Carcinoma Cases, Cases with Questionable Carcinoma, Other Tumors, Other Diseases, and Presumed Normals.*

Source of Antigen	Type of Antigen Used	Type of Sensitization	Positive Carcinoma			Questionable Carcinoma			Other Tumors			Other Diseases			*Presumed Normals		
			Total Cases	Pos. Cases	% Pos.	Total Cases	Pos. Cases	% Pos.	Total Cases	Pos. Cases	% Pos.	Total Cases	Pos. Cases	% Pos.	Total Cases	Pos. Cases	% Pos.
Carcinoma of ovary or HeLa strain tissue culture	Antigens A and B (large and small sized particles)	Active	70	59	84	18	11	61	10	2	20	23	19	82	111	6	5
		Passive	21	18	86	5	5	100	4	2	50	25	8	32	26	1	4
Carcinoma of sigmoid or carcinoma of bronchus	Antigen C (small sized particles)	Active	62	62	96.8	8	3	37.5	9	1	11	123	6	4.8	.....	.....	.....

*Persons tested from the Cancer Detection Clinic at the Johns Hopkins Hospital.

SUMMARY

The present status of serologic and immunologic tests for cancer has been reviewed. Preliminary results with a promising method for the detection of soluble antigen from the serums of patients with carcinoma have been referred to.

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Severe Hiccups Stopped by New Drug

Two Brooklyn physicians reported in the January 22 *Journal of the American Medical Association* that unmanageable hiccups lasting as long as nine months have been stopped almost immediately when the patient was given chlorpromazine.

Dr. Charles E. Friedgood and Dr. Charles B. Ripstein reported that all but 4 of 50 patients stopped hiccuping when given the drug. One of their patients had been hiccuping intermittently every day for nine months. After five days of continued hiccups, he was brought to the hospital in an exhausted state; after one injection of chlorpromazine the hiccups stopped immediately, the doctors reported. Another patient, who had been hiccuping for nine days, was completely exhausted, and had to be fed intravenously, was given chlorpromazine and stopped hiccuping in three minutes.

The physicians said that if the cause of hiccups cannot be treated, hiccuping may return. Five of their patients had hiccups again, but further treatment reduced their intensity and frequency; four patients did not respond because the cause of hiccups could not be treated, they reported.

The doctors said that chlorpromazine is a "safe and useful" drug for treating unmanageable hiccups not stopped by other methods. The drug has been used previously to aid in anesthesia and sedation, lower body temperature, quiet mental patients, and relieve severe pain and nausea.

Cytologic Studies on Pleural and Peritoneal Fluids

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THE historical background of the microscopic examination of transudates and exudates of the serous cavities of the human body has been presented by Bemansky[6] and more recently has been reviewed by Takagi[4] and Vellios.[5] The criteria for the diagnosis of malignant cells have been elaborated by Foot,[1] Marcuse,[2] Takagi,[4] and others. With the revival of interest in the examination of smears of serous fluids by Papanicolaou and Traut[3] a battery of techniques and reports has appeared in the literature. The purpose of this survey of cases was to determine the accuracy of the paraffin block method of study of serous effusion due to a variety of diseases and to present the criteria that were of help in the diagnosis of malignant cells.

METHODS AND MATERIAL

A simple technique was utilized. Fluids removed from the pleural or peritoneal cavities were observed grossly concerning their color, opacity, specific gravity, volume, and presence of fragments of tissue or coagulability. Following removal of aliquot portions for bacteriologic and chemical studies, the remainder was submitted for cytologic examination. The volume of fluid received varied from 2 ml. to in excess of 5 L. Sufficient stock formaldehyde (40 per cent) was added to make a 10 per cent solution. After these solutions were thoroughly mixed, an interval of 4 to 20 hours was allowed for fixation. A cell block was secured by centrifuging the specimen to concentrate the sediment or any cells that may have been included in fibrin or necrotic material that was suspended within the fluid. Attention was focused upon any strands of fibrin on the surface of this fluid as well as sediment from the bottom of the container. Suspension, washing, and centrifugation of this material in ascending concentrations of 70, 80, and 95 per cent ethanol resulted in increased cohesiveness of the particles and aided in the handling of the material. These cell blocks, which varied from 2 to 10 mm. in greatest diameter, were then wrapped in filter paper and processed with the routine surgical tissues. Paraffin blocks were sectioned at 5 microns of thickness, stained with hematoxylin and eosin, and mounted. Special stains were used in cases where such were indicated.

Each specimen was reported as negative for malignant cells, having atypical cells, or having malignant cells. In the event that irregular shaped cells with degenerative changes or suggestive arrangements of cells were encountered but a definite diagnosis of malignant cells was not justified, the specimen was reported as having "atypical cells." Each report on such a fluid was accompanied by a request for subsequent fluid to be submitted for study. The examination of multiple specimens from such cases often resulted in the detection of neoplastic cells. The cytologic diagnoses were made without prior knowledge of the details of the clinical history or findings on physical examination.

The material studied consisted of 528 specimens of pleural and peritoneal fluid from 345 patients who were hospitalized at the University of Texas Medical Branch Hospital sometime from December, 1949, to January, 1954. The fluids were submitted from each department of this general hospital. Consecutive, nonselected fluids were included. Bronchial washings, sputum, gastric washings, pericardial fluids, and fluids from other sources were omitted. The clinical diagnoses referred to were those recorded in writing by the senior physician attending the case.

PLEURAL FLUID

The pathologic diagnoses of 333 specimens from the pleural spaces of 204 patients are shown in table 1. The clinical diagnoses on 149 cases in which at least one specimen of pleural fluid was reported as negative for malignant cells were as follows:

TABLE 1.—*Pathologic Diagnoses of Pleural and of Peritoneal Specimens.*

Diagnosis	Number of Specimens	Number of Patients
Pleural fluid	333	204
Normal	257	149
Atypical cells	31	22
Malignant cells	45	33
Peritoneal fluid	195	141
Normal	134	98
Atypical cells	24	16
Malignant cells	37	27
Total	528	345

Tuberculosis	32
Cardiac failure	24
Carcinoma of lung	23
Lymphoma	11
Pneumonia	10
Carcinoma, primary not determined	9
Effusion, cause undetermined	8
Empyema	7
Other diagnoses	25

Included in the category of "other diagnoses" were carcinoma of prostate, carcinoma of pancreas (2),

From the Department of Pathology, University of Texas Medical Branch.

Read before the Section on Clinical Pathology, Texas Medical Association Annual Session, Fort Worth, April 25, 1955.

carcinoma of larynx, carcinoma of cervix (2), carcinoma of breast (2), nephrosis, chronic glomerulonephritis, perforated peptic ulcer, subdiaphragmatic abscess, bronchiectasis (2), cirrhosis (4), pulmonary embolus, acute lupus erythematosus, malignant melanoma, osteosarcoma, myxedema, thyrotoxicosis, and strangulated inguinal hernia.

The majority of pleural and peritoneal fluids were submitted from patients from 45 to 70 years of age. A detailed tabulation according to age of patient is shown in table 2.

TABLE 2.—*Age of Patients in Years.*

Diagnosis	Age (yr.) 0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-99	Total
Pleural fluid																	
Normal	2	1	2	4	10	6	12	8	10	22	11	13	15	19	7	7	149
Atypical or malignant	2	0	1	1	1	0	2	1	1	8	10	2	7	9	6	4	55
Peritoneal fluid																	
Normal	3	1	0	0	4	3	7	8	7	7	16	10	14	11	5	2	98
Atypical or malignant	1	1	0	0	0	0	1	1	3	5	5	2	9	9	5	1	43
Total	8	3	3	5	15	9	22	18	21	42	42	27	45	48	23	14	345

Subsequent examination of multiple pleural fluid specimens from 5 cases revealed atypical cells, and 11 cases showed malignant cells. In 1 case from which pleural fluid examination was negative for malignant cells, abdominal fluid also was obtained and malignant cells were encountered in the abdominal fluid. Eight patients with negative pleural fluid subsequently had tissue excised from cervical, axillary, or mediastinal lymph nodes, and these tissues were diagnostic of lymphosarcoma, Hodgkin's disease, or reticulum cell sarcoma. Postmortem examination in 3 of these cases showed extensive mediastinal lymphadenopathy that resulted in extrinsic pressure on the azygous vein and superior vena cava. Pressure on these vessels and mediastinal structures evidently accounted for the pleural effusion on the basis of stasis without demonstrable malignant cells in the fluid. No microscopic evidence of extension through the visceral pleura was noted in multiple sections of the pulmonary parenchyma.

In 9 instances pleural fluid was examined from an equal number of patients who were shown later to have carcinoma of the lung by excision of tissue from the lung at the time of thoracotomy, bronchoscopic examination, or postmortem examination. In 2 of these cases which had postmortem examination there was a primary squamous cell carcinoma of a main stem bronchus with extension and/or metastases into the mediastinum.

One patient with a negative cytologic study of pleural fluid had active pulmonary tuberculosis which was diagnosed by bacteriologic studies of sputum and in addition had a histologically proven adenocarcinoma of the colon. There was no clinical evidence of pulmonary metastases.

Additional cases in which pleural studies were negative for malignant cells and which later were shown by histologic studies to have a malignant new growth included cases of primary carcinoma of the cervix, prostate, and pancreas (2), malignant melanoma; carcinoma of the larynx; and 3 cases of metastatic carcinoma to the lung in which the exact site of primary origin could not be ascertained definitely from the examination of the tissue available for biopsy.

The 44 specimens just listed which were reported as negative and subsequently shown by histologic studies to have a malignant neoplasm represented 17.1 per cent of the total of 257 specimens reported as negative. The detection of malignant cells in 11 of these cases that subsequently had additional studies of pleural fluid, 5 cases with atypical cells in pleural fluid, and 1 case with malignant cells in abdominal fluid show the value of examination of multiple specimens from a case in which the initial studies were negative but the hydrothorax persisted. When these multiple examinations of pleural specimens are considered, the percentage of disproven negative reports in this series is reduced to 10.5 per cent. A diagnosis of negative for neoplastic cells therefore does not exclude the possibility of the patient having a malignant neoplasm.

Seventy-six pleural fluids diagnosed as containing malignant cells or atypical cells were studied from 55 patients. Two of these patients also had cytologic studies of abdominal fluid that contained malignant cells. Histologic confirmation of a malignant neoplasm was secured by surgical excision of tissue for biopsy from 10 cases and necropsy studies of 6 cases. Twelve additional patients with atypical or malignant cells in the pleural fluid have died at home, and no postmortem examination was performed.

A false positive diagnosis of malignant cells was made on 2 pleural fluids from 2 different cases among the total of 76 fluids studied. One patient in whom malignant cells were diagnosed died and at necropsy was shown to have arteriosclerotic heart disease with congestive failure. There was no evidence of neoplastic disease. This pleural fluid specimen was evidently mislabeled since the patient in the adjacent bed had a thoracentesis on the same day, the specimen from which was reported negative although this person was shown by postmortem studies to have a malignant neoplasm with gross involvement of the pleural sur-

faces. An explanation for the false positive report in the second case, also one of arteriosclerotic heart disease with congestive failure studied at necropsy, is lacking. The microscopic preparations have been reviewed and the cell block contained cells that have the morphologic features of malignant cells.

An analysis of these cases of pleural effusion according to the sex of the patient (table 3) indicates that the ratio of female to male was 1:1.6.

TABLE 3.—*Sex of Patients.*

Diagnosis	Male	Female
Pleural fluid		
Normal	95	54
Atypical and malignant	30	25
Peritoneal fluid		
Normal	60	38
Atypical and malignant	19	24
Total	204	141

Clinical diagnoses made in this series of 55 patients in which a cytologic diagnosis of malignant or atypical cells were made included:

Carcinoma of lung	23
Carcinoma, primary not determined	5
Carcinoma of breast	4
Carcinoma of ovary	4
Lymphoma	4
Other diagnoses	15

Included in the category of other diagnoses were carcinoma of kidney (2), carcinoma of stomach (2), thyrotoxicosis, hypertensive heart disease, pneumonia (2), tuberculosis, arteriosclerotic heart disease (3), osteosarcoma, carcinoma of skin, and neuroblastoma. In 8 cases, malignant cells were demonstrated in the pleural fluid of patients not previously having a clinical diagnosis of malignant neoplasm.

PERITONEAL FLUIDS

The cytologic diagnoses on 195 peritoneal fluids from 141 patients are shown in table 1. The clinical diagnoses on the 98 cases from which 134 studies of peritoneal fluids were negative for malignant cells follow:

Cirrhosis	40
Carcinoma, primary not determined	8
Arteriosclerotic heart disease	8
Carcinoma of stomach	6
Tuberculosis	5
Effusion, cause undetermined	4
Other diagnoses	27

Included in the category of clinical diagnoses listed as other diagnoses were as follows: carcinoma of ovary (2), carcinoma of pancreas (2), carcinoma of colon (2), carcinoma of cervix (2), lymphoma (2), carcinoma of esophagus (2), neurosarcoma of stomach, obstruction of gastrointestinal tract, empyema of gallbladder, subdiaphragmatic abscess, nephrosis, carcinoma of lung, carcinoma of breast, carcinoma of kidney, nonlipoid reticuloendotheliosis, pelvic abscess, peritoneal abscess, hepatic abscess, actinomycosis, subcutaneous abscesses, and constrictive pericarditis.

The age and sex of the patients which had paracenteses performed are shown in tables 2 and 3. Examination of multiple specimens of fluid aspirated from the peritoneal cavity revealed 8 cases in which there were later shown atypical or malignant cells. Twenty-four additional cases in which the initial findings indicated no malignant cells were shown later at the time of surgical exploration or postmortem examination to have a histologically proven malignant neoplasm. The most commonly encountered malignancy in this group was carcinoma of the liver. This primary carcinoma (hepatoma) was associated with cirrhosis in 4 cases and arose from bile ducts in 1 case, and in 5 cases there were multiple metastases to the liver from a primary carcinoma arising elsewhere in the body.

The mechanism of the production of peritoneal effusion may be by one or a combination of several methods in these cases. First, the location of the metastasis may impair portal blood supply and produce an increased venous pressure. The effect of extensive involvement of the hepatic parenchyma upon the metabolism of protein also must be considered. Irritation phenomena possibly lead to the development of effusion in cases where neoplastic cells extend beneath the peritoneum but do not erode through it.

The peritoneal fluids removed from other patients later shown to have malignant neoplasms included carcinoma of esophagus (2), carcinoma of stomach, carcinoma with no primary site of origin determined (4), carcinoma of pancreas, carcinoma of ovary (2), carcinoma of breast, neurosarcoma of stomach, carcinoma of cervix, and malignant lymphoma.

This total of 32 specimens of peritoneal fluid which was reported as negative and subsequently shown by histologic studies to be from patients with a malignant neoplasm represents 23.9 per cent of the total of 134 specimens reported as negative. The detection of atypical cells in 6 cases which had repeated aspirations and 2 cases in which malignant cells were noted again points out the value of examination of multiple specimens. This is particularly applicable to cases in which atypical cells were noted. When these cases which had multiple specimens of peritoneal fluid are considered, the percentage of negative reports in which a subsequent histologic diagnosis of malignant neoplasm was established was reduced to 17.9 per cent. A report of a negative peritoneal fluid does not have as specific a connotation as a similar report on a study of a pleural specimen.

Sixty-one specimens of peritoneal fluid were diagnosed as containing atypical or malignant cells. This material was secured from 43 patients. No false positive diagnoses have been encountered in this group. The clinical diagnoses which were most often made were as follows:

Carcinoma of ovary	7
Carcinoma, primary not determined	7
Carcinoma of liver	5
Carcinoma of stomach	5
Carcinoma of pancreas	3
Carcinoma of colon	3
Other diagnoses	13

Included in the category of other diagnoses were carcinoma of kidney (2), carcinoma of prostate, carcinoma of uterus, carcinoma of lung, cirrhosis (3), tuberculosis, lymphoma, thrombophlebitis (2), and carcinoma of larynx.

Histologic confirmation of a malignant new growth was secured from surgically excised tissue from 6 cases and by necropsy studies of 10 additional cases. Seven additional patients in this group have died at home, and no postmortem examination was secured.

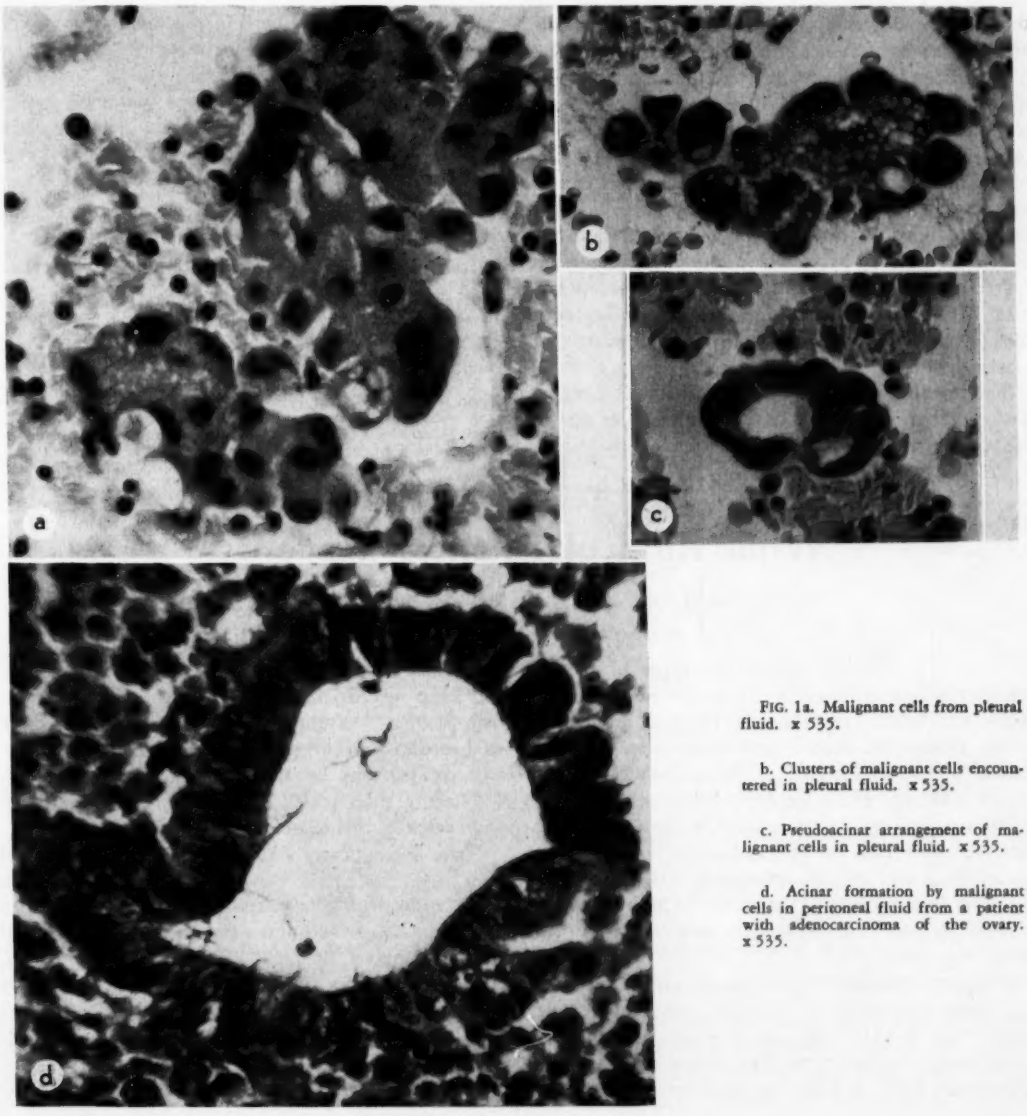

FIG. 1a. Malignant cells from pleural fluid. x 535.

b. Clusters of malignant cells encountered in pleural fluid. x 535.

c. Pseudoacinar arrangement of malignant cells in pleural fluid. x 535.

d. Acinar formation by malignant cells in peritoneal fluid from a patient with adenocarcinoma of the ovary. x 535.

DISCUSSION

The fluids containing malignant cells also were associated with other cellular elements. Erythrocytes were present in great numbers in some of the material. Pleural fluid from 6 cases contained malignant cells that were sufficiently well differentiated to be diagnostic of squamous cell carcinoma. These primary neoplasms arose in the bronchi. One case of adenocarcinoma of the breast was associated with pleural effusion in which acini were formed by the neoplastic cells. Peritoneal fluids were examined from 2 cases of primary adenocarcinoma of the ovary and from 1 case of adenocarcinoma of the liver in which the malignant cells formed well defined acini.

Distorted mesothelial cells with degenerated, vacuolated cytoplasm must be differentiated from malignant cells. The nuclei of degenerated cells usually were at the periphery of the cells and showed karyolysis. Of greater value was the irregular clumping of the neoplastic cells. Pseudoacinar patterns formed by curved columns of cells were of no value in establishing a diagnosis of malignant neoplasm since they were often formed by mesothelial cells in cases where the effusion was the result of an inflammatory disease. Mitotic figures also were observed in the mesothelial cells from cases not having malignant neoplasms.

The presence of malignant cells in serous fluid indicates extension or implantation metastases to the surfaces of the serous cavities. This has a practical application in cases where a positive diagnosis was made since these findings indicate that the neoplasm had extended beyond the tissue in which it originated. At the present time, such thoracic lesions are considered nonresectable. A negative report on a cell block does not exclude the possibility of a patient having a neoplasm. References have been made to the possible anatomic and physiologic explanations for the formation of fluid within serous cavities without neoplastic cells being present in the fluid.

SUMMARY

A review of 528 pleural and peritoneal fluids from 345 patients has included the clinical diagnosis, cytologic findings on examination of the cell block, and correlation data. Of the 333 pleural fluids, 76 contained atypical or malignant cells. A false positive diagnosis of malignant cells was made in 2 cases. Of 195 peritoneal fluids, 81 specimens contained atypical or malignant cells. No false positive diagnoses have been encountered.

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What Kind of Financial Records?

WILLIAM R. HUNT, B.S.C., Waco, Texas

SIMPLY put, the types of records you keep are determined by what you want to know about, and to do with, your practice and money.

The established doctor most frequently wants to know, "Where does it go?" or "Why don't I have any money at the end of the month?" Other questions that we hear are along this vein: "How does my profit compare with that of other doctors?" or "Doctor Money Bags says he paid taxes on so many thousand —are my fees too low, or expenses too high—or does he work harder?" or "Will I be able to slow down when I'm older?"

Of course comparative information can be misleading. Some doctors may speak of gross collections; others may include only net professional profit or actual taxable income after exemptions and personal deductions. Some exclude depreciation expense and a few may even quote total fees, not collections. You can keep records that will facilitate clarifying your own picture. Not until there is more use of standardized medical bookkeeping and accounting procedures will comparisons be actual. Auto dealers have set accounting rules which enable one dealer's performance actually to be compared with another's.

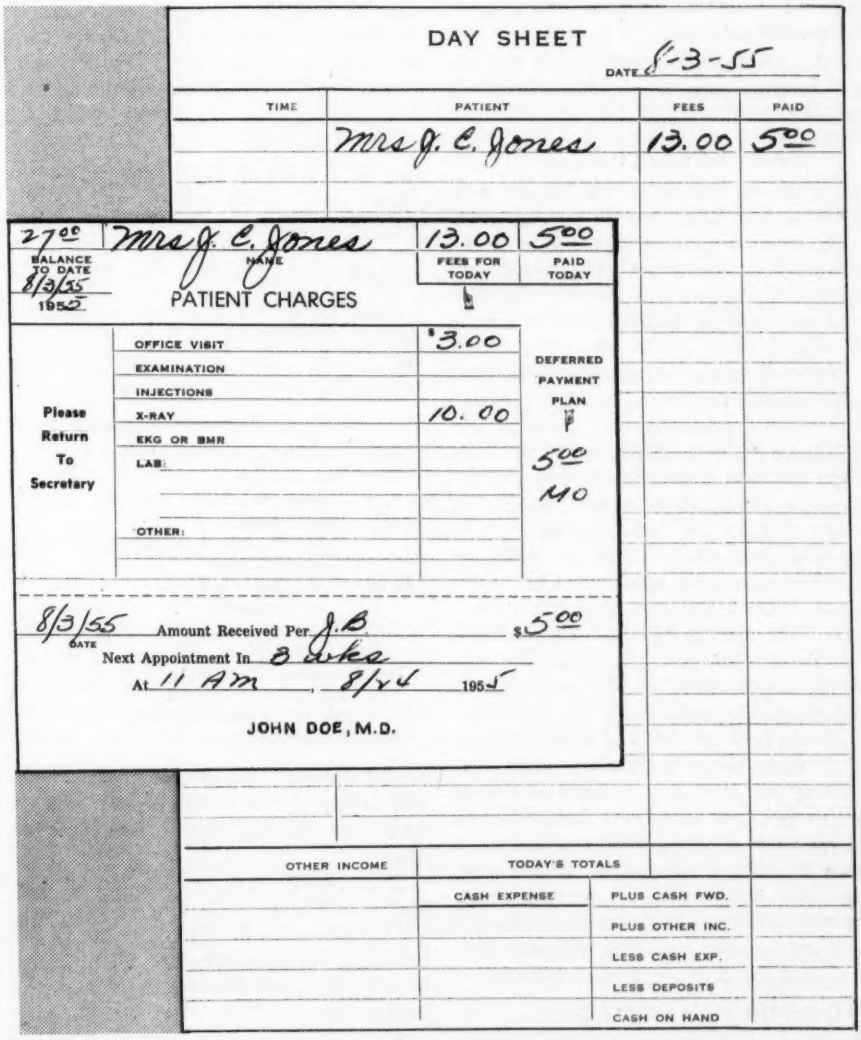
Some doctors carry salary expense as a net amount after deductions and the withholding amounts as taxes, instead of salaries as gross amounts, as they should be. Some doctors differentiate business and personal interest or taxes only on the tax return. Some wise doctors "buy and sell" professional autos to gain tax deductions while others keep "trading" depreciated cars and have less book value to deduct. Depreciation rates vary extensively. Lastly, type and location of practice necessitates more analysis of com-

parative financial information. Over-all comparative information depends on having a standard basis.

But what about knowing your own complete financial picture? This you can do, and as more doctors do know their complete financial status, two important things happen. The term, "Doctors are poor business managers," will be less in vogue, and there will not be statistics in future years showing that doctors cannot afford to retire like business men with comparable incomes of the past years.

There are two well known facets of financial records in a doctor's office. They are tax records and patients' records.

Are there others? Yes and they can be worth while. One example is records for the doctor's information, which often can answer the question "Where does the profit go?" Such records may raise questions you may never before have thought to ask.



DAY SHEET

DATE 8-3-55

TIME	PATIENT	FEES	PAID
	Mrs J. C. Jones	13.00	5.00

27.00 BALANCE TO DATE 8/3/55 1955

Mrs J. C. Jones NAME

13.00 FEES FOR TODAY

5.00 PAID TODAY

PATIENT CHARGES

	OFFICE VISIT	$3.00
	EXAMINATION	
	INJECTIONS	
Please Return To Secretary	X-RAY	10.00
	EKG OR BMR	
	LAB:	5.00
		1.10
	OTHER:	

DEFERRED PAYMENT PLAN

8/3/55 DATE Amount Received Per J.B $5.00

Next Appointment In 3 Weeks

At 11 AM 8/24 1955

JOHN DOE, M.D.

OTHER INCOME	TODAY'S TOTALS		
	CASH EXPENSE	PLUS CASH FWD.	
		PLUS OTHER INC.	
		LESS CASH EXP.	
		LESS DEPOSITS	
		CASH ON HAND	

FIG. 1. Examples of an efficient day book sheet and a duplicating charge slip. The bottom section of the itemized charge slip can be torn off for the patient as a combination receipt and reminder of his next appointment date. The top line on the charge slip is carbonized to produce duplicating entries on the day sheet.

A well organized office may easily combine records for tax purposes and other records for the doctor's information. Examples of the latter that are not needed for tax purposes would be (1) total fees, (2)

collection ratios, (3) distribution of net profit, and (4) status of notes, investments, and insurances.

Some offices maintain other financial records to determine ratios of total fees to laboratory, x-ray, electrocardiograph, and other charges. Some doctors want comparative information on total fees to particular work such as obstetrical cases in general practice, cardiac cases in internal medicine, and gynecology cases in general surgery.

There are three types of financial records that will be discussed hereafter, tax records, doctors' records, and patients' records.

TAX RECORDS

"Uncle Sam" leaves no choice; the doctor must have records to prepare his income tax and employees' withholding tax returns. Just as important, adequate records are needed to substantiate the amounts submitted. To maintain income tax records, minimum proofs should be made at least once a month as follows:

1. Bank deposits balanced with income totals (petty cash disbursements reimbursed by check).

2. Professional disbursements plus personal disbursements balanced with total changes of bank account balances. If cash expenses are paid without reimbursement by check, these amounts should be reconciled with deposits and disbursements.

To insure that these proofs always are made, regardless of office rush or employee changes, many doctors use some outside service to maintain tax records for them. This cost can be more than recovered by saving productive office time for patient load and efficient collection procedures[1] and by getting maximum tax deductions. In maintaining tax deductible items, there should be a list not only of business deductions each month, but of nonbusiness deductions too. This insures that they may be used in lieu of the standard 10 per cent or $1,000 deductions on page 2 of form 1040. Too many doctors lose these tax deductions by not recording them each month. In recording your own tax records, the instructions that came with your last year's income tax forms can be used as a good check list. The March, 1955, JOURNAL also had information on tax deductions.[2]

DOCTORS' RECORDS

In addition to adequate tax records, the wise doctor, young or old, keeps other facts available so that he can see the results of managing his professional and personal business affairs. He can see how to avoid future pitfalls by keeping posted on all his affairs.

Most doctors know their total fees. From this monthly figure, collection ratios can be watched. Collection ratios should be evaluated in judging the doctor's profit. If profit is poor and work load good, it may be a collection problem. But if collections are good, a low profit may mean that fees are not charged for work done, fees are not billed, expenses are too high, or fees are too low.

In evaluating expenses, comparative figures are valuable, both from your previous records and from the averages of other doctors. If you utilize the latter, take care to allow for discrepancies of practices. For instance, Do you own or rent? Do you employ a technician or send laboratory work out? and, Do your depreciation rates differ from another doctor's?

If a doctor has a good location, practices good medicine, and has a good personality, his problem may be summed up in the frequent question, "Where does it go?" In later years, it may be "Where did it go?" In short, now is the time to see where it goes and to adjust where necessary or be ready to make changes as you know they are coming.

The basic means towards the end of any good program of management is to have full information available. Thus, adding the following items to the tax records will give the information you need:

Professional Profit (for schedule C of tax return).

Plus:	Taxable income (nonprofessional).
Less:	Personal interest.
	Personal taxes.
	Contributions.
	Other Personal tax deductions (such as brokers' commissions).
Equals:	Total taxable income (for use in quarterly income tax estimates).
Plus:	Nontaxable receipts (such as dividends on insurance policies).
Less:	Personal living expenses.
	Life insurance premiums.
	Federal income taxes paid.
Equals:	Net gain or loss.

The amount of net gain or loss each month is then the balance of the changes of your assets (what you own) and your liabilities (what you owe) for that month.

Once your net gain remains satisfactory, the problem is to discover what kind of gain you had. Are you in most need of more payments on notes to decrease interest costs, more cash for an emergency fund, more professional equipment, or more long term investments?

To solve this, the net gain first must be broken down as to what it was, that is, increases and decreases in assets and liabilities.

An outside service can do this for you, but again, if you want to maintain these records, take the balance of disbursements not already accounted for in expenses and list them with the month's change in the cash on hand and in the bank. The difference

plus the change of cash on hand or in the bank should equal your net gain or loss.

Now you know where it went. The last step is to keep a summary. For instance, get the balance of your notes, mortgages, savings, investments, and depreciable equipment and add or subtract the applicable disbursements from the net gain or loss.

If you had all this information to show what happened and what is on hand and could review it for at least 15 minutes a month, you might soon see how and where you could alter your present procedures so that your financial success would be the best possible for you and your family. If your wife or family are not cooperating in your financial planning, it probably means that they do not realize where the money goes, and once you can show them your continuing status, you may be happily surprised to find that they want to be in on improved planning. Your financial picture should not be kept from your wife. Some day she may have to take over the personal financial management in full. Give her the experience of sharing the planning now and do not underestimate what she should know.

If you have an outside service to maintain your full financial picture, the cost probably will be worth while in allowing you more time for patients and family. You will have more peace of mind by knowing you are doing the best you can with what you have. You will have more in the future because you immediately will know what you can and cannot afford to do any time opportunities or desires arise.

A double-entry accounting system will insure that this information is as accurate as possible.

Other financial records may be worth while for certain situations. For instance there may be a need or desire to increase or decrease particular work in a practice. Thus laboratory fees or fees for specialized cases are an object of comparison to total fees and may be kept as separate records. From such comparisons the doctor can analyze the work in his practice.

Only a few doctors have adequate insurance summaries. Having your agents prepare a summary of actual policies is enlightening and may enable you to save as situations change.

A life insurance summary should include for each policy, (1) face value and annual premium, (2) cash value this year and at age 65, (3) total premiums to date and to age 65, (4) comparative cost for renewable term policy to age 65 for the same face value.

When comparing life insurance policies, it is well to remember that the cash value is paid only if you live, and that the extra premium is lost if you die because the cash value is not paid in addition to the face value.

Each liability and casualty insurance policy should be listed as to items covered, amount of protection, and annual premiums.

PATIENTS' RECORDS

Patients' records should be part of a financial record system. Too often, accounts receivable are maintained as part of a patient's medical record. Because of increasing insurance reports and better records of diagnostic work, this is satisfactory only in a new practice. Sooner or later, the doctor and his employees wish they were separate. It is much easier to start correctly than to change later.

Keeping financial records on patients is best coordinated with your day book and charge slips. Some systems have three columns in the day book which have to be posted to two columns, or the day book has headings which are reversed in posting to patient's financial record. This adds possibility of more errors. Why not have "Fees" and "Paid" columns from which posting amounts will be the same? For example, see table 1 for three transactions in three types of day books: (1) a $3 fee that is charged, (2) a $7 fee of which $5 is paid, (3) a $5 payment on account. Note that only the type 3 day book can be posted in the same amounts to the same columns on the patients' record.

TABLE 1.—*Relationship of Posting in Three Types of Day Books to Patients' Records.*

Type of Day Book							Results on Patient's Record		
1			2		3				
Charge	Cash	On A/C	Paid	Charged	Fees	Paid	Fees	Paid	Balance
$3.00	–0–	–0–	–0–	$3.00	$3.00	–0–	$3.00		$3.00
2.00	$5.00	–0–	$5.00	2.00	7.00	$5.00	7.00	$5.00	2.00
–0–	–0–	$5.00	5.00	–0–	–0–	5.00	–0–	5.00	–0–

A further check on posting accuracy of fees and receipts can be accomplished by posting machines which now cost too much for the average office. This you can accomplish with your adding machine as follows: (1) Offset or pull patients' records that are to be posted. (2) Add balances of these accounts. (3) Post from day book or charge slips. (4) Add new balances of these accounts.

The difference of these total balances should equal the difference of fees and payments from your day book for the day. Consequently if your fees and payments are correct in the day book (or on charge slips) you know that your accounts receivable will be correct.

To insure that your statement will be prepared in the same amounts of your accounts receivable, you may use a combination statement–patients' financial record form.[1]

CONCLUSION

Office procedures and financial records can be organized to take these detailed burdens off the doctor's hands, thus giving him more productive time. If a doctor has a satisfactory patient load, a well run office, and complete financial information, he can practice better medicine and achieve better financial success.

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Management Service for Doctors, P. O. Box 5003.

MEDICOLEGAL PROBLEMS in GENERAL PRACTICE

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THE investigation of violent, sudden, or suspicious deaths begins with and must depend to a large extent on the general practitioner who determines that death has occurred and who will donate time to help the legal authorities in their investigations of the death. The advent of scientific medicine, with the development of chemical procedures and gross and microscopic pathology in the past 100 years, has made available a great many specialized techniques for determining the cause of death. At the same time the means of committing crimes have become more intricate. In Europe these two developments, scientific medicine and scientific crime, have led to the development of highly specialized scientific medicolegal investigative departments. In America, however, this specialty of medicine has been slow to gain recognition. So far only a few major cities and seven of our states have laws establishing competent systems for the investigation of violent, sudden, or unexplained death. In those areas all of the knowledge and specialized facilities of medicine can be brought to bear in protecting the public by the investigation of those deaths in which the public interest is involved. Elsewhere, as here in Texas, these investigations are carried out by lay coroners or justices of the peace who frequently are forbidden by law, or restricted by inadequate funds, from having performed the autopsies necessary if all of the important facts concerning the cause of death are to be ascertained.

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The public interest goes beyond the solution of the cold-blooded murders; and it is a fallacy to think that a layman could view a dead body and determine the cause of death in a fashion adequate for the criminal courts which must prosecute for the compensation courts which must award in proportion to the contribution of occupational factors to a death, or for the health authorities who need prompt and accurate information as to cause of death of persons succumbing to contagious disease if they are to prevent epidemics. From the medical standpoint the procedure of having the primary investigation conducted by a layman without medical assistance is as ridiculous as it would be to ask the first man one meets on the street whether an operation for appendicitis should be performed on your child with a pain in the stomach. The rebuttal of these observations may be offered that the lay coroner or justice of the peace may acquire help in the form of consultation by physicians to perform autopsies or other examinations. The inadequacy of this system becomes obvious if one realizes that the primary and important decision as to whether an autopsy shall or shall not be performed must be made on the basis of external physical findings and a carefully elicited medical history. These the lay coroner is not trained to obtain or interpret. Our experience in Maryland supports this conclusion since cases frequently are seen in which, despite the absence of external injuries on the body or circumstances indicative of violence, an autopsy performed because of the lack of positive knowledge as to cause of death will reveal evidence of homicide, suicide, or accidental death.

What then are the problems of the general practitioner who is cooperating in the investigation of medicolegal deaths? First, let us define the cases in which the public interest demands full knowledge of the cause and manner of death. Briefly they may be grouped into homicides, suicides or accidental deaths, those occurring suddenly when the person was in apparent good health, those unattended by a physician, and a small group in which the death occurs under

unusual or suspicious circumstances. An example of one such case follows:

A 35 year old man who had complained of indigestion and burning sensation in the chest and abdomen one evening was found dead in bed at noon the following day. External examination showed nothing but the medical investigator ordered an autopsy despite the history suggestive of coronary disease. An extradural hematoma was found. With this evidence of injury, the police, in tracing his movements the previous night, were able to show that a substantial sum of money was missing and that he had been drinking with a co-worker from a nearby industrial plant. The co-worker, faced with the statement that the man had been struck a hard blow on the left side of the head and that his money was missing, at first denied assaulting his friend. When a weapon was found where he had hidden it and it was shown that he had suddenly become affluent, he finally confessed to the fatal assault.

The solution to the problem of selecting medicolegal cases for complete investigation including an autopsy is based on the general formula that the cause of death must be demonstrated beyond reasonable doubt in all deaths falling in any of the previously mentioned categories. Any compromise in this philosophy will lead to the failure of detection of murder or the destruction of evidence in murder cases to such an extent that the case cannot be prosecuted successfully. Likewise, the courts are supported at public expense to administer justice and settle disputes in the most informed manner possible. They need the medical facts obtainable many times only through an investigation and autopsy performed on official order at the time of the death.

In violence from gunshot wounds, the autopsy may shed additional light on the findings at the scene, but the general practitioner should have sufficient knowledge of the nature of gunshot wounding to allow him to recognize the direction of fire and to estimate the range in uncomplicated cases. The criteria by which range is estimated are:

(1) *Marginal Abrasion and Soiling.* There is denudation of epithelium around the entrance hole where the skin is depressed and stretched over the entering bullet, with soiling and scraping away of the margins in closest contact with the bullet. This is seen at all ranges and distinguishes the wound as a bullet entrance (fig. 1).

(2) *"Stippling" or "Tattooing" and Powder Soiling.* This shows close range but no contact. It consists of multiple tiny abraded and burned areas of the skin where hot powder grains from the gaseous muzzle discharge hit the skin. The density of stippling and soiling by smoke varies inversely with the range whereas the diameter of the stippled area varies directly with range; that is, the shorter the range, the smaller the circle of stippling and soiling but the more dense it is. Its presence proves that the range was less than 15 to 18 inches, and experimental firing of the same gun to produce similar patterns to those on the victim frequently will give an estimate of range of fire that is reliable within 1 to 2 inches.

(3) *Annular Abrasion or Contusion.* This refers to an arc of abraded or contused skin, concentric with the bullet hole but separated from the edge of the defect with its marginal abrasion by a narrow band of intact skin. The lesion is caused by sudden slapping of the skin against the end of the gun muzzle as gases from the discharge enter the hole and expand beneath the skin, blowing it back against the muzzle. Occasional wounds with annular contusion will, in addition, show "sight marks," that is, abraded points where the skin was blown against the foresight on the end of the gun barrel. When present, annular contusion and sight marks are unmistakable evidence of close contact wounding by gunshot. In addition, the margins of close contact wounds are frequently lacerated, torn by the explosive escape of gases from the discharge (fig. 2).

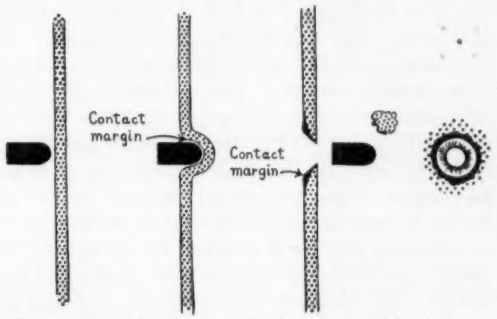

FIG. 1. Sketch shows mechanism of marginal abrasion in gunshot entrance.

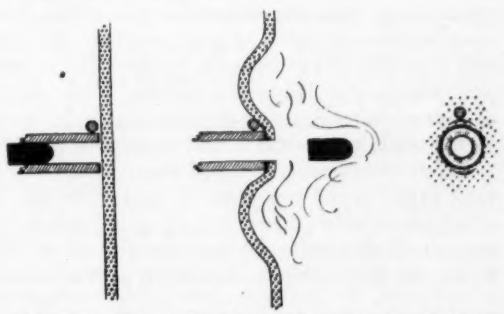

FIG. 2. Mechanism of annular contusion and sight marks in contact gunshot wounding is pictured.

(4) *Residues in the Wound.* In close range and contact wounds, fragments of burned and unburned powder and wadding are apt to be blown into the wound and can be found and identified by microscopic study of tissue dissected from along the bullet tract.

In cases of blunt injuries the occurrence of subdural and extradural hemorrhages in the absence of external injuries always must be borne in mind. The possibility of determining the direction of the impact causing a lacerated injury because of a tendency to undermine on the side to which the force was directed is frequently useful. The artifactual subdural hemorrhages and skull fractures incident to fires must be borne in mind in investigation of bodies removed from burning buildings. The multiplicity of injuries so common today in automobile accidents with the characteristic bumper fracture, steering wheel injuries. neck fractures, and brain contusion with secondary swelling, all make it necessary that a complete and careful history be elicited with reconstruction of the nature of the accident if possible. The pathologist frequently can make important contributions to the solution of these questions which become of major importance when automobile manslaughter is involved.

In sharp wounds the physician should observe the nature of the margins of the wound, with special knowledge of the characteristic hesitation cuts in self inflicted wounds in contrast to the sharp clean margin of wounds inflicted by an assailant. The pathologist in such cases should attempt to estimate the depth of penetration of the instrument as well as its size or minimum width in order to aid the police in their search for the weapon.

In the investigation of rape cases, the family physician is usually the first person called when aid or advice is sought by the victim of a sexual assault. His duties in such a case must include both the care of the patient and the collection of the evidence likely to be useful to the police in establishing the occurrence of the sexual assault or the identity or guilt of the assailant. The physician must bear in mind the usual necessity of establishing in court that the crime was accomplished by violence as evidenced by bruises, scratches, or other injuries on the body of the woman as well as the evidence of seminal fluid and injuries in and about the privates of the victim. The identification of spermatozoa in stained smears from the victim's vagina is the best proof of intercourse and, if accompanied by evidences of injury, may confirm the victim's allegation of rape. Specimens should be collected promptly with smears made on glass slides and allowed to dry immediately. Wet swabs deteriorate and a specimen should never be submitted to the laboratory in this fashion. Specimens of clothing bearing stains should be collected, allowing the stains to dry before sending to the laboratory. In certain cases a liquid specimen may be aspirated from the vagina for the phosphatase test. In such cases it should be refrigerated until testing is done.

The importance of alcohol study in the investigation of violent deaths is not widely recognized, and the general practitioner who investigates the automobile fatality or the homicidal death should not consider his investigation complete without submission of a sample of blood or spinal fluid for testing for the presence of alcohol in the accident cases and for alcohol and blood grouping in the assault deaths (tables 1 and 2).

TABLE 1.—*Alcoholism in Highway Victims, 1950-1953, Baltimore.*

Person Injured	Total Cases	Below .04%	0.05%—0.15%	0.15%+
Pedestrians	177	94	22	61
Drivers	105	49	24	32
Passengers	102	70	13	19
Total	384	213	59	112

TABLE 2.—*Alcoholism in Victims of Homicide.*

Manner	Total Cases	Alcohol Concentration—Percentage— None	.01-.09	.10-.40	.40+
Shooting	25	5	4	15	1
Stabbing	25	7	1	17	0
Blunt Force	18	9	3	6	0
Total	68	21	8	38	1

SUMMARY

The law should provide for competent investigation of all deaths which are caused by violence, of accidental nature, sudden when the person was in apparent good health, or under unusual or suspicious circumstances. The general practitioner, who conducts the primary investigation, elicits the medical history, and frequently decides if the autopsy is necessary, is an important member of the medicolegal investigative team. The general practitioner who would assist in the medicolegal investigations should familiarize himself with the basic characteristics of wounds due to shooting, stabbing, and blunt force. The determination of alcohol content is an important corollary in most medicolegal investigations.

CURRENT TEXAS MEDICAL EXAMINER LAW

The Texas Legislature passed House Bill 539 which provides that the commissioners court of certain counties may appoint a medical examiner. This is a pilot program and represents a study of this problem by various groups in the medical profession as well as certain county and district attorneys. This law will apply only to counties having a population of 250,000 or more according to the last preceding federal census. It is hoped that during the two year period before the Texas Legislature meets the county commissioners courts of these counties will appoint a medical examiner so that a study can be made at the

end of two years, at which time corrective legislation can be introduced in the next Legislature to combat any defects that show up during this time.

If the law is successful in the four large counties of Texas, it is hoped the Legislature will extend it to all of the counties in Texas. A copy of the law follows, and any comments and constructive suggestions concerning the new law would be welcome by the Texas Medical Association's general counsel, Philip R. Overton, Capital National Bank Building, Austin.

Section 1. Office Authorized. The Commissioners Court of any county having a population of two hundred and fifty thousand (250,000) or more, according to the last preceding Federal Census, may establish and provide for the maintenance of the office of Medical Examiner subject to the provisions of this Act.

Sec. 2. Appointment and Qualifications. The Commissioners Court shall appoint the Medical Examiner, who shall serve at the pleasure of the Commissioners Court. No person shall be appointed Medical Examiner unless he is a physician licensed by the State Board of Medical Examiners. To the greatest extent possible, the Medical Examiner shall be appointed from persons having training and experience in pathology, toxicology, histology and other medico-legal sciences. The Medical Examiner shall devote so much of his time and energies as is necessary in the performance of the duties conferred in this Act.

Sec. 3. Assistants. The Medical Examiner may, subject to the approval of the Commissioners Court, employ such deputy examiners, scientific experts, trained technicians, officers and employees as may be necessary to the proper performance of the duties imposed by this Act upon the Medical Examiner.

Sec. 4. Salaries. The Commissioners Court shall establish and pay the salaries and compensations of the Medical Examiner and his staff.

Sec. 5. Offices. The Commissioners Court shall provide the Medical Examiner and his staff with adequate office space and shall provide laboratory facilities or make arrangements for the use of existing laboratory facilities in the county.

Sec. 6. Death Investigations. Any Medical Examiner, or his duly authorized deputy, shall be authorized, and it shall be his duty, to hold inquests with or without a jury within his county, in the following cases:

1. When a person shall die within twenty-four (24) hours after admission to a hospital or institution or in prison or in jail.

2. When any person is killed; or from any cause dies an unnatural death, except under sentence of the law; or dies in the absence of one (1) or more good witnesses.

3. When the body of a human being is found, and the circumstances of his death are unknown.

4. When the circumstances of the death of any person are such as to lead to suspicion that he came to his death by unlawful means.

5. When any person commits suicide, or the circumstances of his death are such as to lead to suspicion that he committed suicide.

6. When a person dies without having been attended by a duly licensed and practicing physician, and the local health officer or registrar required to report the cause of death under Rule 41a, Sanitary Code of Texas, Article 4477, Revised Civil Statutes, General Laws, Forty-sixth Legislature, 1939, page 343, does not know the cause of death. When the local health officer or registrar of vital statistics whose duty it is to certify the cause of death does not know the cause of death, he shall so notify the Medical Examiner of the county in which the death occurred and request an inquest.

7. When a person dies who has been attended immediately preceding his death by a duly licensed and practicing physician or physicians, and such physician or physicians are not certain as to the cause of death and are unable to certify with certainty the cause of death as required by Rule 40a, Sanitary Code of Texas, Article 4477, Revised Civil Statutes, Chapter 41, Acts, First Called Session, Fortieth Legislature, 1927, page 116. In case of such uncertainty the attending physician or physicians, or the superintendent or general manager of the hospital or institution in which the deceased shall have died, shall so report to the Medical Examiner of the county in which the death occurred, and request an inquest.

The inquests authorized and required by this Article shall be held by the Medical Examiner of the county in which the death occurred.

In making such investigations and holding such inquests, the Medical Examiner or an authorized deputy may administer oaths and take affidavits. In the absence of next of kin or legal representatives of the deceased, the Medical Examiner or authorized deputy shall take charge of the body and all property found with it.

Sec. 7. Reports of Death. Any police officer, superintendent of institution, physician, or private citizen who shall become aware of a death under any of the circumstances set out in Section 6 of this Act, shall immediately report such death to the office of the Medical Examiner or to the city or county police departments; any such report to a city or county police department shall be immediately transmitted to the office of the Medical Examiner.

Sec. 8. Removal of Bodies. When any death under circumstances set out in Section 6 shall have occurred, the body shall not be disturbed or removed from the position in which it is found by any person without authorization from the Medical Examiner or authorized deputy, except for purpose of preserving such body from loss or destruction or maintaining the flow of traffic on a highway, railroad or airport.

Sec. 9. Autopsy. If the cause of death shall be determined beyond a reasonable doubt as a result of the investigation, the Medical Examiner shall file a report thereof setting forth specifically the cause of death with the District Attorney or Criminal District Attorney, or in a county in which there is no District Attorney or Criminal District Attorney with the County Attorney, of the county in which the death occurred. If in the opinion of the Medical Examiner an autopsy is necessary, or if such is requested by the District Attorney or Criminal District Attorney, the autopsy shall be immediately performed by the Medical Examiner or a duly authorized deputy. In performing an autopsy the Medical Examiner or authorized deputy may use the facilities of any city or county hospital within the county or such other facilities as are made available. Upon completion of the autopsy, the Medical Examiner shall file a report setting forth the findings in detail with the office of the District Attorney or Criminal District Attorney of the county, or if there is no District Attorney or Criminal District Attorney, with the County Attorney of the county.

Sec. 10. Disinterments and Cremations. When a body upon which an inquest ought to have been held has been

interred, the Medical Examiner may cause it to be disinterred for the purpose of holding such inquest.

Before any body, upon which an inquest is authorized by the provisions of this Act, can be lawfully cremated, an autopsy shall be performed thereon as provided in this Act, or a certificate that no autopsy was necessary shall be furnished by the Medical Examiner. Before any dead body can be lawfully cremated, the owner or operator of the crematory shall demand and be furnished with a certificate, signed by the Medical Examiner of the county in which the death occurred showing that an autopsy was performed on said body or that no autopsy thereon was necessary. It shall be the duty of the Medical Examiner to determine whether or not, from all the circumstances surrounding the death, an autopsy is necessary prior to issuing a certificate under the provisions of this Section. No autopsy shall be required by the Medical Examiner as a prerequisite to cremation in case death was caused by the pestilential diseases of Asiatic cholera, bubonic plague, typhus fever, or smallpox, named in Rule 77, Sanitary Code of Texas, Article 4477, Revised Civil Statutes of Texas, 1925. All certificates furnished the owner or operator of a crematory by any Medical Examiner, under the terms of this Act, shall be preserved by such owner or operator of such crematory for a period of two (2) years from the date of the cremation of said body.

Sec. 11. Records. The Medical Examiner shall keep full and complete records, properly indexed, giving the name if known of every person whose death is investigated, the place where the body was found, the date, the cause and manner of death, and all other relevant information concerning the death, and shall issue a death certificate. The full report and detailed findings of the autopsy, if any, shall be a part of the record. Copies of all records shall promptly be delivered to the proper District, County, or Criminal District Attorney in any case where further investigation is advisable. Such records shall be public records.

Sec. 12. Transfer of Duties of Justices of Peace. When the Commissioners Court of any county having a population of two hundred and fifty thousand (250,000) or more, according to the last preceding Federal Census, shall establish the office of Medical Examiner, all powers and duties of Justices of the Peace in such county relating to the investigation of deaths and inquests shall vest in the office of Medical Examiner. Any subsequent general law pertaining to the duties of Justice of the Peace in death investigations and inquests shall apply to the Medical Examiner in such counties to the extent not inconsistent with this Act, and all laws or parts of laws otherwise in conflict herewith are hereby declared to be inapplicable to this Act.

Sec. 13. Penalty. Any person in violation of any provision of this Act, upon conviction, shall be punished by a fine of not more than Five Hundred Dollars ($500) or by imprisonment in the county jail for not more than thirty (30) days, or both such fine and imprisonment.

Sec. 14. Emergency. The fact that death investigations in the counties with large populations are becoming increasingly numerous and demand a degree of expertness not available under existing law, creates an emergency and an imperative public necessity that the Constitutional Rule requiring Bills to be read on three several days be and the same is suspended, and this Act shall take effect from and after the date of its passage, and it is so enacted.

Cobalt Therapy in Anemia

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COBALT has been known for more than 20 years to be a stimulant of erythropoiesis, yet only recently has it won any general acceptance in the treatment of anemia. It is curious that this effective agent has been passed over for so long in favor of various dubious hematinics and iron adjuvants, but apparently exaggerated ideas of its toxicity have held back its use.

This report is concerned primarily with the clinical trial of cobalt in anemia due to a variety of causes and in most cases refractory to other prior therapy. Some of the patients have received cobalt over long periods of time. It seems possible that the diversity of these cases and the length of observation of some might contribute additional evidence for the relative safety of this useful antianemic agent.

OTHER STUDIES

Cobalt therapy has been used earlier and to a greater extent in Europe than in this country, with the report of Waltner[1] in 1930 apparently describing the first instance of clinical trial in children.

Sheldon,[2] Cronin,[3] and Baxter[4] briefly reported the use of cobalt in adults in the same decade. In this country, Kato[5] in 1937 reported the treatment of 55 anemic children, with good results in most. Other significant reports from the United States were those of Berk and others[6] and Robinson, James, and Kark.[7] Our own use of cobalt began in 1947, with application to anemias resistant to other therapy. In this same year, Caussade and Petitdant-Monniot[8] in France described the use of cobalt for anemia in 5 infants and 8 children. They were surprised at the speed and intensity of response and noted that the administration seemed harmless.

Since that time Weissbecker,[9] Wolff,[10] Weissbecker and Maurer,[11] Wolff and Barthel,[12] and Wilberg[13] in Germany and Seaman,[14] Gardner,[15] Rohn and Bond,[16] and Quilligan[17] in this country have reported on the clinical aspects of various phases of cobalt therapy.

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The clinical value of cobalt in anemia seemed well established by the reports mentioned. The German workers frequently employed intravenous and, later, intramuscular preparations with good results if they were used with reasonable caution. Weissbecker[9] noted that heavy dosage or too rapid intravenous administration gave the results to be expected from any strongly dissociated metal, for example, as in the case of iron. It should be noted that Schmoger[18] treated 40 premature infants with intramuscular cobalt–amino acid complex and cobalt-iron preparations without difficulty.

The lack of a clear understanding of the mode of action of cobalt has probably contributed to a reluctance to use it clinically. In this country, at least, cobalt probably has been associated more often with polycythemia induced in animals than with clinical problems of anemia therapy. Such polycythemia in experimental animals is, of course, only temporary, requiring massive dosage to sustain, and is not a problem in clinical usage. However, it is well established that cobalt has a powerful erythropoietic effect with an increase in erythrocyte precursors in the bone marrow.[5, 9, 10, 15] Barron and Barron,[19] Orten and Buccerio,[20] and Weissbecker[9] have contended that cobalt acts through interference with cell respiration to cause an indirect anoxia. On the other hand, Schultze[21] has shown that cobalt feeding increased the cytochrome oxidase activity of the bone marrow of mature rats, while Warren and others[22] have given evidence that cobalt cannot act through production of an indirect anoxia. Furthermore, the oxygen-carrying capacity of hemoglobin formed under cobalt stimulation is normal. Berk and others[6] have shown that erythrocytes produced during 11 weeks of treatment with cobalt contained spectrophotometrically normal oxyhemoglobin and survived normally when transfused. Finally, Levey and Orten[23] have shown that cobalt does not stimulate erythropoiesis by way of intermediary formation of vitamin B_{12}. On the basis of the reports of Crafts[24] and Seaman[14] and of Erslev,[25] it seems possible that the cobalt effect may be hormone-like in action.

Recently Kriss, Carnes, and Gross[26] described the development of hyperplasia of the thyroid gland in 5 patients receiving cobaltous chloride. Three had clinical goiter, 3 showed laboratory evidence of deficiency of thyroid, and 1 developed serious clinical myxedema. After withdrawal of the drug, the goiters and the laboratory evidence of depression of thyroid activity disappeared. It seems worthy of note that 4 of these 5 cases were of sickle cell anemia.

In any event, some of the concepts of toxicity of cobalt need to be revised and such cautions as those of Berk and his associates[6] and the statements of Wintrobe[27] regarding clinical application may now be regarded with less concern in the light of accumulating clinical experience. It is true that large doses of cobalt given parenterally may cause toxic symptoms. We should remember, however, that iron too is toxic in heavy parenteral dosage, and that excessive iron taken orally by accident has been fatal in small children.[28, 29]

PRESENT STUDIES

In our initial studies we treated only occasional cases of anemia that were refractory to other therapy, such as those associated with chronic infection, especially chronic arthritis, and the hypochromic anemias not responding to iron. Cobalt chloride usually was prepared to give from 20 to 80 mg. of the salt per teaspoonful. Only batches with lead-free analyses were chosen, and dosage in adults was kept around 50 mg. daily and in children from 10 to 30 mg. daily. The solution was added to cold water or milk and usually taken after meals. Later, larger doses ranging from 100 to 160 mg. daily were employed. Nausea with larger doses was a problem, and when enteric cobalt–iron combinations became available (Roncovite), this form was employed except in those cases in which iron overload was evident (for example, following many transfusions) or in which bone marrow iron stores were maximal. Enteric coated cobalt chloride tablets in 100 mg. sizes, both with iron (200 mg.) and without it, were also made available to us for these unusual cases.* Although nausea, or more rarely vomiting, was encountered with elevated dosage or prolonged therapy, it was found that after omission of the drug for an interval of a few weeks, it was possible to resume therapy.

A total of 115 cases received cobalt or cobalt and iron preparations. Included in this heterogeneous group of anemias were anemia of infection, blood loss anemia, iron deficiency anemia, azotemia, anemia associated with arthritis, nutritional anemia of infants and children, hypoplastic and aplastic anemias, hemolytic anemias of congenital and acquired types, Mediterranean anemia, and finally, anemia associated with other blood dyscrasias and malignant neoplasms such as the various leukemias, multiple myeloma, Hodgkin's disease, and reticulum sarcoma. Because of the diversity of the conditions, any over-all statistical evaluation would be meaningless and therefore none is given.

No apparent benefit was derived from cobalt therapy in our cases of acute aplastic anemia, leukemia, Hodgkin's disease, and multiple myeloma. Results were doubtful in Mediterranean anemia and most of the hypoplastic anemias. In the latter condition, 2

*Supplied by Lloyd Bros., Inc., Cincinnati 3.

out of 11 cases were definitely helped to a moderate degree. The best results with cobalt were observed in the anemias associated with low grade infection, arthritis, blood loss, and iron deficiency, and in hemolytic anemia. Satisfactory hemoglobin elevations in these conditions are in line with the experience of others. However, we were greatly surprised at the good response in our first use of cobalt in a case of acquired hemolytic anemia in 1948, which reversed a declining hemoglobin after splenectomy. In 2 additional cases of acquired hemolytic anemia and 3 of congenital type receiving cobalt, good responses were obtained. In 3 cases of azotemia with anemia, good hemoglobin elevation was obtained, but without significant alteration of the basic disease. Blood loss and iron deficiency anemias responded well to cobalt, especially when combined with iron. Many of these cases had shown inadequate response to iron alone.

In a special category were 18 cases of anemia in pregnancy, most of which had not responded adequately to prior iron therapy. In comparison with a control group of 63 patients receiving iron alone, the cobalt-iron patients gained an average of 1.73 Gm. of hemoglobin per 100 cc. of blood, while those receiving iron alone showed an average gain of 0.73 Gm. per 100 cc. Using the method of analysis of covariance, a statistical study failed to show significant results when four variables, namely, hemoglobin

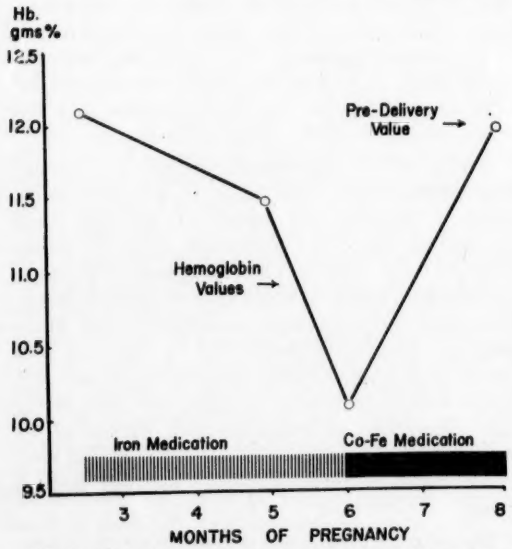

FIG. 1. Chart showing response to iron and cobalt-iron therapy in 8 pregnant patients.

concentration increment, initial hemoglobin level at start of therapy, stage of pregnancy, and total dose of iron received, were considered. On the other hand, detailed analysis of the response to therapy of the 18 cases of pregnant women receiving iron and cobalt is quite significant. In 8 of these women the hemoglobin level was declining on iron therapy alone, but the trend was promptly reversed and an increase in hemoglobin level recorded when cobalt and iron were used. In 5 cases without prior iron therapy, substantial increases in hemoglobin were obtained on iron and cobalt therapy. In 5 cases in which cobalt and iron were not given until the postpartum period, a satisfactory increase in hemoglobin levels was attained on iron and cobalt.

Figure 1 represents the average hemoglobin values for the 8 patients who responded poorly to iron but whose hemoglobin improved with combined cobalt-iron therapy. Holly[30] has postulated that a "hypoplastic factor" may be present in such cases and that cobalt may aid in overcoming the consequent hemopoietic inhibitor.

CASE REPORTS

CASE 1. *Anemia Associated with Arthritis.*—A 48 year old white woman had had rheumatoid arthritis over a period of 10 years. The right hip, both knees, hands, and shoulders

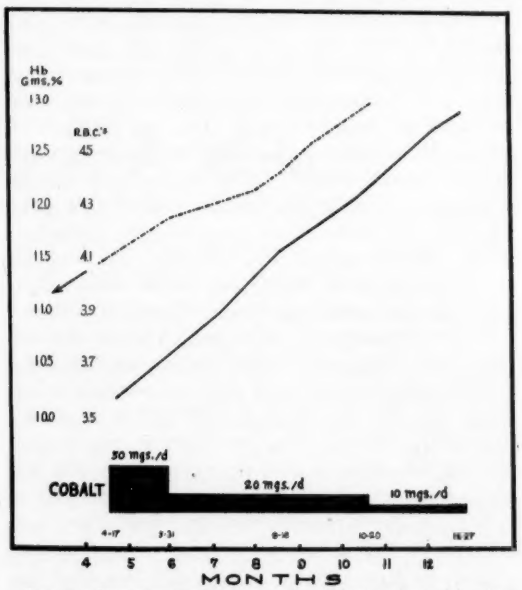

FIG. 2. Chart showing increase in hematologic values with cobalt therapy in anemia due to arthritis. The dotted line represents hemoglobin; the solid line, red blood cells.

were involved. The patient received extensive salicylate therapy, vitamins, intravenous novocaine, gold, and other medications. There had been a moderate anemia for four years, but not severe enough to require transfusions. She was placed on 50 mg. of cobalt daily, but this was reduced to 20 mg. because of nausea. A steady rise in red blood cell count and hemoglobin level occurred over a period of eight months, as illustrated in figure 2.

CASE 2. *Congenital Hemolytic Anemia.*—The patient, a

30 year old white woman, had experienced several episodes of hemolysis, the first at the age of 8 years. The family history was typical, with mother and brother also anemic. Following a severe episode requiring several transfusions (given in spite of her objection), the patient was advised to have a splenectomy. She belonged to a religious group opposed to blood transfusion, and splenectomy was deferred because of the low hemoglobin level and her refusal to accept transfusion in preparation for surgery. When first seen on our service, the patient had 7.85 Gm. of hemoglobin per 100 cc. Cobalt therapy was started in lieu of transfusion, with the good results shown in figure 3. Splenectomy was performed without transfusion, and the patient has sustained good hemoglobin levels without other complaints since operation.

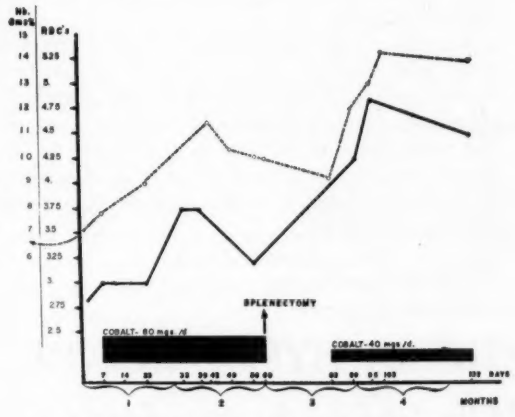

FIG 3. Chart showing effect of cobalt therapy before and after splenectomy in congenital hemolytic anemia. The dotted line represents hemoglobin; the solid line, red blood cells.

CASE 3. *Anemia Associated with Chronic Infection.*—This 31 year old white woman developed a macrocytic anemia during her second pregnancy. Treatment with folic acid was followed by some improvement, according to her physician. However, the anemia persisted after delivery, and the patient was referred to us for further study. A normocytic hypochromic anemia with a relatively normal bone marrow was found. Extensive studies were made relative to infectious or metabolic diseases, but the only abnormality presented by the patient was the persistent anemia and a familial otosclerosis. Later, urologic studies showed a cystitis cystica and a chronic left pyelonephritis.

The patient was treated with penicillin and streptomycin. Ferrous sulfate, 2 Gm. daily for several months, failed to elevate the hemoglobin over the 11 Gm. level. Cobalt added to the iron resulted in a slowly rising hemoglobin, which reached 13 Gm. eight months later. The patient received a total of 6,950 mg. of cobaltous chloride, 10 to 50 mg. daily, during 252 consecutive days. She has continued on the drug at intervals, according to her needs, and her hemoglobin has remained at a satisfactory level in spite of sporadic exacerbations of her urinary tract infection and a recently discovered bronchiectasis of the lower lobe of the right lung.

CASE 4. *Blood Loss Anemia.*—This 45 year old white woman was first seen here as an out-patient May 29, 1952. She had first discovered that she was anemic about ten years before, when she volunteered to give blood. In 1951, she had a cholecystectomy and required transfusions of 5 pints of blood. However, she apparently recovered and had no complaints until about six months later when she became very anemic and was admitted to the hospital in April, 1952. She was given 4 pints of blood and discharged one week later. At the time of her first visit here the hemoglobin was 11.6 Gm. Her menstrual history revealed a marked menorrhagia.

She was placed on 50 mg. of cobaltous chloride daily, and 15 days later, as shown in figure 4, the hemoglobin had declined to 12.8 Gm. Thirteen days later, the hemoglobin was at the same level. The cobalt dosage was increased to 120 mg. daily, and the first hemoglobin determination thereafter, on July 9 (nine days later) showed 13.1 Gm. By August 4, the hemoglobin reached 16.3 Gm. and cobalt was discontinued. Later the patient had a hysterectomy and required no further medication for anemia.

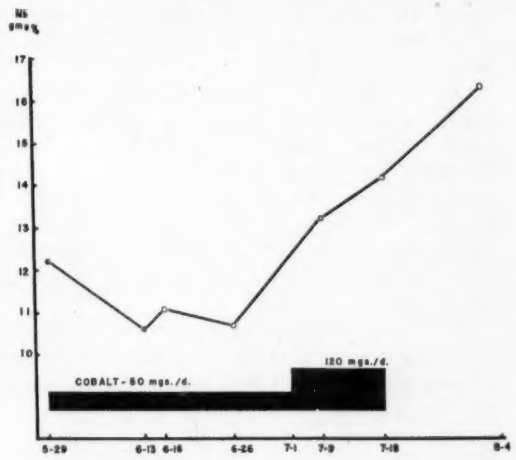

FIG. 4. Chart showing response to cobalt therapy in anemia due to chronic blood loss.

DISCUSSION

Severe toxic effects were not observed in any patients of this series receiving cobalt orally. The only side effect noted with any frequency was anorexia, sometimes grading into nausea, and, more rarely, vomiting. With dosages ranging higher than 100 mg. daily, this effect was somewhat more troublesome, but at the same time was regarded as an automatic safety factor in preventing overdosage. Only one patient, a 66 year old woman, complained of a sense of constriction and severe pain in her chest and had to give up cobalt therapy. This patient had a normal blood pressure and electrocardiogram. On the other hand, one patient of the azotemia group, with severe hypertension and cardiac insufficiency, tolerated cobalt well, with no adverse effects while taking 3.130 mg. over a period of 93 days. No clinical evidence of goiter or thyroid suppression under cobalt therapy was observed in any case. On the contrary, most patients felt an increased sense of well being when hemoglobin levels were elevated. On the whole,

the degree of discomfort suffered by those reacting adversely was comparable to that seen in occasional cases with iron therapy alone. In the dosage given in this series, the cobalt seemed entirely safe and comparable to iron in that respect.

The recognition of the role of cobalt in normal metabolism as part of the vitamin B_{12} molecule should remove some feeling of prejudice against this agent. Of course, the direct stimulating effect on erythropoiesis considered in this paper is obviously by a different mechanism.

On the basis of the clinical experience herein reported, extending over a period of eight years, cobalt appears to be a reasonably safe therapeutic agent, somewhat comparable to iron in toxicity, and an effective stimulant of erythropoiesis in several types of anemia. With depletion of iron reserves, cobalt-iron combinations seem more effective than either drug alone. In the rarer cases with increased iron stores cobalt alone is preferred.

No clinical indication of thyroid insufficiency or apparent enlargement of the gland suggested the need for radioactive iodine (I^{131}) uptake studies or protein bound iodine determinations in our series. We are at a loss therefore to understand the claim of Kriss and co-workers[26] that cobalt is a goitrogen capable of producing serious thyroid suppression.

CONCLUSIONS

Clinical experience with cobalt therapy in various anemias over a period of eight years and involving 115 cases is reported.

Cobalt appears to be an effective agent for the stimulation of erythropoiesis and is therapeutically useful in anemias due to chronic infection, iron deficiency, and blood loss, azotemia, and in some cases of congenital and acquired hemolytic anemia. Cobalt therapy is of doubtful benefit or ineffective in multiple myeloma, leukemia, Hodgkin's disease, and reticulum cell sarcoma.

No serious toxic manifestations or side effects were noted with doses of 50 to 160 mg. of cobaltous chloride daily in adults and 10 to 50 mg. in children, according to body weight. Mild to moderate nausea, and rarely vomiting, occurred after intensive or prolonged therapy. No clinical evidence of suppression of thyroid activity or enlargement of the thyroid gland was observed.

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A bibliography may be obtained from the author.

PRESENT DAY MANAGEMENT OF HYPERTENSION

ARTHUR GROLLMAN, M. D., Ph.D., F.A.C.P., Dallas, Texas

HYPERTENSION remains one of the commonest serious disorders encountered by the physician, and although many attempts have been made to mitigate the effects of the disease, these, at best, have been unsatisfactory. The ease with which the blood pressure can be determined has led to an overemphasis on this single aspect of the disease and a failure to appreciate the lability of this hemodynamic function. Rest, reassurance, and sedatives have long constituted the basic methods in the management of hypertension. During the last several decades, surgery in the form of sympathectomy and dietary measures in the form of drastic sodium restriction have been added as more effective measures for lowering the blood pressure in selected patients. More recently, a variety of drugs have been introduced with such enthusiastic claims by their proponents as to lead many to believe that these have solved the problem of hypertension. Drug therapy for hypertension is not new, for even during the earlier decades of this century, nitrates, nitrites, and thiocyanate had a period of popularity. Experience in the use of the newer drugs has led to a more critical attitude towards these agents and has revealed many of their previously unforeseen side-effects and limitations.[1]

The purpose of the present paper is to review briefly the status of the various measures used in the present day management of the hypertensive patient and to indicate their respective advantages and deficiencies.

EVALUATION OF PATIENT

Recent experimental studies in hypertension have elucidated many previously moot points regarding its pathogenesis and have led the way to a more rational approach to the treatment of this disorder. It has become clear that hypertension or, better designated, hypertensive cardiovascular disease, is a systemic disorder involving more than simply a rise in blood pressure. The rise in blood pressure is a reflection of a more basic hemodynamic alteration involving an increase in peripheral resistance due to arteriolar constriction. Alterations in blood pressure may occur in

Based on a panel symposium presented by the author in collaboration with Dr. John H. Moyer, Houston, and Dr. Edward D. Futch, Galveston, before the Section on Internal Medicine, Texas Medical Association Annual Session, Fort Worth, April 26, 1955. The views expressed are those of the author and are not necessarily shared by the other members of the panel.

From the Department of Experimental Medicine, University of Texas Southwestern Medical School.

conditions other than the particular disorder designated as hypertensive cardiovascular disease. For example, the elevation in systolic blood pressure observed in atherosclerosis is unrelated to a comparable rise in systolic pressure accompanied by a concomitant rise in diastolic pressure as seen in hypertensive cardiovascular disease.

The first essential on encountering a patient with hypertension is to evaluate the severity of the disease by a general survey of the patient and not to rely merely on the level of the blood pressure as obtained on single or even frequently repeated determinations. Too often a patient being told of the high level of his blood pressure is so conditioned as to respond to subsequent examinations by a rise in pressure due to excitement. This is true particularly if the pressure is labile and if the patient is of a nervous temperament. The level of the blood pressure in the doctor's office accordingly may not reflect the true severity of the disease.

Before embarking on any program of treatment the patient with hypertension should have a general survey with at least an evaluation of the size and condition of the heart, an ophthalmoscopic examination, and a study of the renal function. The history of the patient, particularly as to the occurrence of familial hypertension, is of importance because of the hereditary influence in the occurrence of essential hypertension.[2] The duration of the disease is also of importance since rapidly appearing hypertension in the so-called "malignant" or accelerated form is often the result of one of the rare causes of hypertension, namely, infarction of the kidney, thrombosis of a renal vessel, or similar conditions which are amenable to surgery. Such examinations and laboratory studies as may be necessary also should be carried out to exclude the rare instances of pheochromocytoma which give rise to paroxysmal or chronically elevated hypertension. Rarely, the presence of an atrophic kidney or constriction of the renal artery may give rise to hypertension, which in a few instances has been cured surgically. It must be emphasized that these causes of hypertension are rare and are encountered infrequently by the general practitioner. Nevertheless, an adequate study is justified in order to exclude these and treat them properly by surgical measures. Such cases occasionally will be cured, whereas, if unrecognized, they may proceed to a chronic irreversible stage or terminate fatally.

MANAGEMENT

Having excluded the aforementioned rare causes of hypertension, the physician must evaluate the severity of the hypertension and its rate of progression since this determines the most appropriate form of treatment. It must be emphasized again that reliance should not be made on the level of the blood pressure only, particularly since in our present state of knowledge, there is only presumptive evidence that lowering the level of the blood pressure by available methods is conducive to the well-being of the patient and will mitigate in any way the ultimate effects of the disease. It is unwise, accordingly, to subject a patient with labile and mild hypertension who shows no evidence of significant organic changes in the heart, eyegrounds, or kidney to onerous restrictive diets, to surgery, or to the risks involved in treatment with potentially dangerous drugs. In patients with mild hypertension, symptomatic relief is obtainable by reassurance and by other relatively simple measures.

It is in the moderately advanced hypertensive patient with a fixed elevation in blood pressure and evidence of secondary changes in the cardiovascular system that more intensive measures should be applied in an attempt to mitigate the ultimate ravages of the disease. In addition to the simple measures already mentioned, three general procedures are useful—dietary, surgical, and drug therapy. Since details of these procedures have been described in numerous publications,[4] the present paper will limit itself to a brief survey only of their present status.

The plan of management in any given patient will depend on whether or not complications of the disease are present. In the absence of complications, such symptoms as are present can be managed by simple measures and reassurance. The presence of cardiovascular and arteriosclerotic complications requires special consideration before any plan of treatment is begun. In the accelerated (or malignant) phase, special attention must be paid to the status of the renal function before the plan of management can be determined. It is thus apparent that no simple procedure can be outlined for the management of the hypertensive patient and that a complete evaluation of the patient and his disease must precede any decision as to the most suitable form of therapy.

DIET

The dietary management of hypertension is based on the demonstrated effectiveness of sodium restriction in lowering the blood pressure in certain patients. However, to apply this method effectively, both the physician and the patient must be acquainted with the sodium content of foods, and the physician must follow the urinary output of salt for a time to ensure that the patient is actually restricting his sodium intake. Unless this be done the method is certain to fail.

It is now apparent that the rice diet, introduced by Kempner, owes its efficacy to its low sodium content, and careful studies have demonstrated that equally satisfactory results are obtained without resort

to such a drastic regimen. The use of resins has proven unsatisfactory because of the electrolyte and acid-base imbalance resulting from their use unless accompanied by the administration of potassium salts between meals. Their occasional use for the patient who is obtaining meals outside of his own home obviates the necessity of having to rely entirely on home cooking.

SURGERY

The recent enthusiasm for drug therapy has led some to regard sympathectomy as obsolete in the management of hypertension. However, such an attitude is unjustified. Sympathectomy appears to have slowed the progression of the accelerated phase of hypertension and prolonged life in certain patients. Adrenalectomy still must be considered to be in an experimental stage of development and not as an established form of therapy for hypertension.

DRUGS

Despite the many enthusiastic reports and claims for the value of hypotensive drugs in the treatment of hypertension, there is disagreement among different observers as to the merits and effectiveness of these agents. Enthusiasm for the new, rather than careful observation, may be responsible for the more extravagant reports, and it is doubtful if the drugs, as frequently used, have had the beneficent effects claimed for them by their proponents. It is exceedingly difficult to dissociate the effects of reassurance and suggestion on so labile a function as the blood pressure from that induced by a given treatment. There is no question that numerous agents including those recommended for the treatment of hypertension are capable, when used in sufficiently large doses, of lowering the blood pressure in the normal as well as in the hypertensive person. However, it is necessary to titrate carefully the dosage with each patient in order to obtain definite lowering of the blood pressure without undue side effects. Adequate therapy resulting in hypotension is inevitably accompanied with each of the available drugs by numerous side effects. The physician must keep these in mind and warn the patient against their appearance if he is to avoid serious consequences of overdosage.

The principal drugs in present use include the ganglionic blocking agents (hexamethonium and pentolinium salts), hydralazine, various preparations of the Veratrum alkaloids, and extracts and purified principles of Rauwolfia serpentina. Hexamethonium salts, although widely used orally in this country, have been shown by the careful clinical observations of several groups of British workers to be absorbed erratically from the gastrointestinal tract. In the case of the more recently introduced pentolinium, precaution against undue absorption of the drug as a result of constipation must be taken. Parenteral administration appears to be the only rational method for the use of these agents in hospitalized patients.

Because of the danger of inducing a clinical syndrome resembling that of disseminated lupus, justification for the use of hydralazine for prolonged periods appears to be questionable. The Veratrum derivatives suffer from the defect that the emetic and hypotensive dosages are so comparable. The preparations derived from Rauwolfia serpentina also are not free of undesirable side effects when used for long periods. Such hemodynamic effects as they induce are probably secondary to their tranquilizing action.[3]

The generally most satisfactory response to the modern drugs has been in the young and middle aged patients with hypertension complicated by left heart failure, retinitis, and transient encephalopathic attacks and in malignant and premalignant stages of the disease. In such patients, the prognosis is poor, and any regimen, despite the considerable demand made on the patient as well as on the part of the physician, would justify their use. This is quite different than in the young and middle aged benign hypertensive patient with uncomplicated disease in whom any onerous and potentially dangerous method might not be worth while. There is as yet no evidence that encephalopathic attacks or anatomic changes in the vessel walls which ultimately result in thrombosis, cerebral hemorrhage, or dissecting aneurysm are influenced or ameliorated by the use of drug therapy. Nor has it been shown that such effects as cerebral softening, mental deterioration, renal damage, or other complications of hypertension and arteriosclerosis are prevented or modified.

It is in the malignant (accelerated) phase of hypertension that drug therapy has proven of undisputed value in causing a reversion of the disease to its more benign phase. The reversal of the changes in the eyegrounds, the decrease in cardiac size, the amelioration of the symptoms, and the prolongation of life attest to the benefits of therapy in this stage of the disease. Comparable results have been reported following drastic sodium restriction including the rice diet and following sympathectomy in some cases, but it appears that the drugs by their prompter and effective action are superior in this respect than the other procedures. However, the drugs when used in this phase of hypertension must be used with caution and circumspection lest they precipitate or worsen renal or cardiac insufficiency by a precipitous drop in blood pressure.

DISCUSSION

The very diversity of the opinions expressed by competent observers as to the relative merits of dif-

ferent methods used in the treatment of hypertension reflects the inadequacy of presently available methods. This is not surprising if one considers that no available procedure is specific in the sense that it counteracts the basic defect responsible for the disease. There is good reason to believe that the inordinate rise in diastolic pressure characteristic of most cases of hypertension in the malignant (accelerative) phase of the disease contributes to the arteriolar necrosis and fatal outcome of this condition. It is in this stage of the disease that therapy has been most successful in ameliorating symptoms and prolonging life. However, the fact that occasionally the accelerated phase of hypertension may make its appearance with only moderately elevated pressure, as after coronary thrombosis, suggests that the mechanical effects of an elevated pressure alone are only contributory and not the sole cause of the catastrophic changes characteristic of this stage of the disease.

SUMMARY

The principles involved in the management of the patient with hypertension and the status of the available methods for the treatment of the disorder are reviewed. Each form of treatment has certain hazards and inconveniences which must be balanced against the benefit gained by therapy. No available method may be considered as specific in the sense that it counteracts the basic disturbance responsible for the disease.

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MEDICAL MANAGEMENT OF HYPERTENSION

Role of the Sympathetic Nervous System in Hypertension and Pharmacology of Drug Therapy

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IN THE normal person, the sympathetic nervous system is largely responsible for regulation of arterial blood pressure by controlling peripheral resistance through its vasoconstrictive effect on the arterioles. Neurogenic impulses travel over the sympathetic nervous system from the vasoregulatory centers in the brain and spinal cord, through the preganglionic neuron to the ganglione where acetylcholine is liberated (fig. 1). The acetylcholine stimulates the postganglionic neuron (second neuron) which goes to the blood vessel. At this site, norepinephrine is liberated and causes the blood vessel to constrict, thus raising the blood pressure.

Many influences come to play on the vasoregulatory centers. These influences arise in the cerebrum from conscious thinking and subconscious influences as well as from environmental and emotional stimuli. Circulating agents operative through the hypothalmic area may stimulate the vasoregulatory centers and thus increase the outflow of vasoconstrictor impulses over the sympathetic nervous system. Numerous reflexes, such as the carotid sinus reflex, also affect the outflow of vasoconstrictor impulses.

Pharmacologic observations indicate that in essential hypertensive vascular disease there is an increase in the outflow of vasoconstrictor impulses over the sympathetic nervous system (fig. 2) resulting in increased peripheral resistance with a subsequent rise in blood pressure to abnormal levels. Neither the blood volume nor the cardiac output is altered. This increase in impulse outflow over the sympathetic nervous system may be due to numerous causes, such as psychogenic stimuli or circulating agents which are released by the kidney going to the brain and increasing the outflow of vasoconstrictor impulses. Irrespective of the origin of the hypertensive vascular disease, it appears that the sympathetic nervous system is the common outflow tract for increasing the blood pressure in patients with hypertension. Although this is far from being the entire clinical picture of essential hypertension, it at least gives some insight as to the blood pressure component of this disease entity.

Today, there are available numerous drugs which

Based on a panel symposium presented by the author in collaboration with Dr. Arthur Grollman, Dallas, and Dr. Edward D. Futch, Galveston, before the Section on Internal Medicine, Texas Medical Association, Annual Session, Fort Worth, April 26, 1955. The views expressed are those of the author and are not necessarily shared by the other members of the panel.

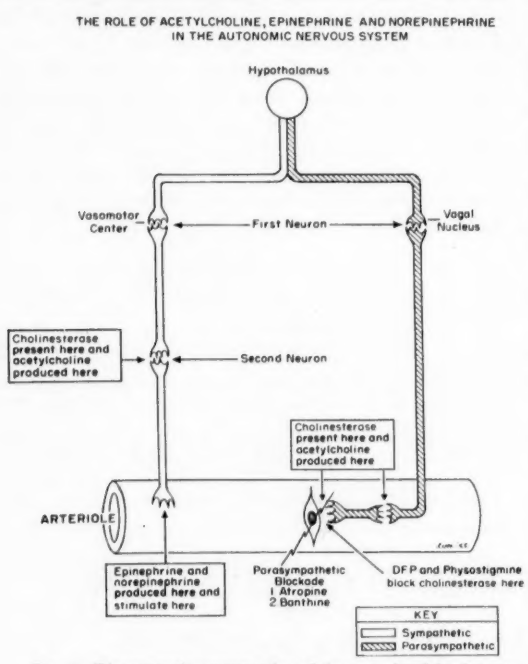
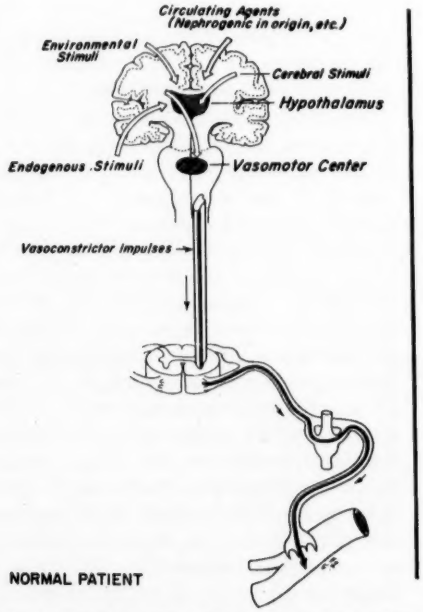


FIG. 1. Diagrammatic representation of the part played by the autonomic nervous system in the regulation of blood pressure. Vasoconstrictor impulses emerge from the vasoregulatory centers. They flow down over the sympathetic nervous system to the blood vessels where they produce vasoconstriction, and thus raise the blood pressure. (After *Medical Records and Annals.*)

are effective in lowering the blood pressure in patients with hypertension by blocking the outflow of vasoconstrictor impulses. They can be divided into three categories depending on the site of blockade of the sympathetic nervous system: (1) centrally acting agents, (2) ganglionic blocking agents, and (3) adrenergic blocking agents (fig. 3).

The centrally acting agents block the outflow of vasoconstrictor impulses by depressing the hypothalmic and vasoregulatory centers. The drugs most effective in this respect are Rauwolfia compounds, hydralazine (Apresoline), and Veratrum compounds. By far the most useful agents in this group for outpatient use are the Rauwolfia compounds. Not only are these drugs effective in lowering the blood pressure, but also they prepare an excellent background for the use of peripherally acting agents. Rauwolfia compounds depress the sympathetic nervous system in the hypothalamus and upper medullary areas. When used in conjunction with ganglionic blocking agents (peripheral agents), the sympathetic nervous system is further depressed. The concurrent administration of Rauwolfia compounds markedly reduces the dose requirement of ganglionic blocking agents and thus reduces the side effects of these agents. The main limiting factor of Rauwolfia extracts when administered by the oral route is that they are only mildly to moderately potent. In patients with severe hypertensive vascular disease, these drugs are not too effective, and another adjunctive agent is necessary.



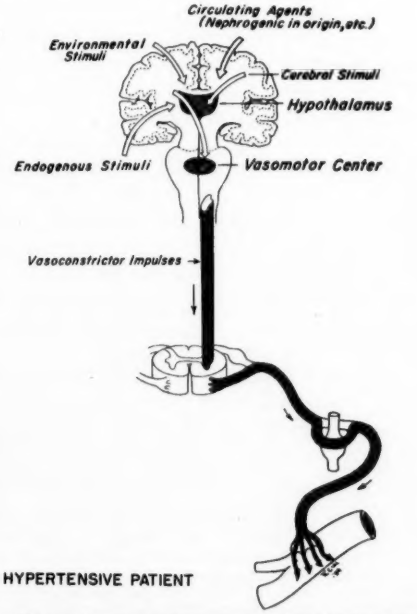


FIG. 2. Left. Diagram of a normal person with a normal outflow of vasoconstrictor impulses over the sympathetic nervous system from the brain to the blood vessels. (After *American Journal Medical Sciences.*)

Right. Diagram of a hypertensive patient showing a marked increase in vasoconstrictor impulses traveling over the sympathetic nervous system to the blood vessels.

Hydralazine also is moderately effective in patients with hypertension, but unfortunately this drug produces tachycardia and other undesirable side reactions. However, when hydralazine is used in conjunction with Rauwolfia, the tachycardia and some of the undesirable side effects are minimized. Unfortunately, even the combination of hydralazine with Rauwolfia is only moderately potent and usually will not reduce the blood pressure in severe hypertension.

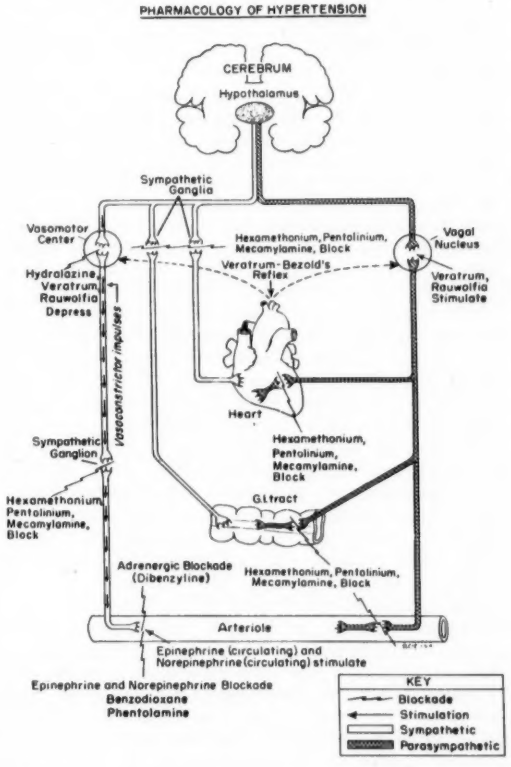


FIG. 3. Diagram illustrating that drugs which reduce the blood pressure can be divided into central agents, ganglionic blocking agents, and adrenergic blocking agents. Irrespective of the site of blockade, sympathetic vasoconstrictor impulses going to the blood vessels are reduced. (After *Medical Records and Annals.*)

The Veratrum compounds usually cause nausea and vomiting in effective doses and are rarely used in our clinic.

The second group of drugs effective in reducing the blood pressure, particularly when used in combination with Rauwolfia, are the ganglionic blocking drugs. These agents are by far the most useful drugs for the patient with severe and malignant hypertension. The drugs which are available today for oral use are pentolinium, hexamethonium, and mecamylamine. Hexamethonium and pentolinium are equally effective in reducing the blood pressure. In our clinic, the response rate for both drugs is almost equivalent and the incidence of side effects is approximately the same. Pentolinium is much more potent and longer acting and can be given in smaller doses less frequently. It should be kept in mind, however, that some patients will respond better to hexamethonium than to pentolinium, whereas some other patients will respond better to pentolinium than to hexamethonium. The chief drawback with these agents is that they are poorly absorbed from the gastrointestinal tract, and lead to variable absorption and variable effects on the blood pressure. When this occurs, there is often associated constipation which can be annoying.

Recently, we have been working with the secondary amine known as mecamylamine (Inversine). This is the first ganglionic blocking agent which is completely absorbed from the gastrointestinal tract. This drug is very potent and frequently produces ganglionic blockade when administered in doses of 5 mg. twice a day. In our experience, it is better to give small doses more frequently. The average dose of this drug is about 10 to 15 mg. a day. We have found that it is best to give the drug with each meal and at bedtime. The main disadvantage is that the blood pressure reduction, as with any of the ganglionic blocking agents, is primarily in the orthostatic position. The most crucial point in the use of these drugs is proper dose titration. A case example is seen in figure 4. In carrying out the dose titration of any

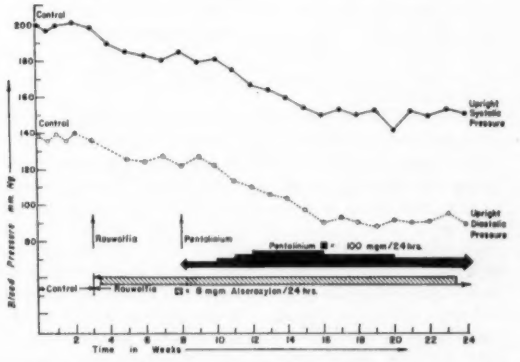


FIG. 4. Graph showing the method of regulating the blood pressure in a patient with severe hypertension. Since the response to Rauwolfia was inadequate, pentolinium had to be added. The dose was established by the titration procedure.

drug, it is necessary to start with a relatively small dose and gradually increase the dose until effective reduction in blood pressure occurs without prohibitive side reactions. If a fixed dose is used without the titration procedure, only a small number of patients will get a beneficial therapeutic result. The remainder will get either an inadequate dose of the drug or an excessive dose with too great a response.

TABLE 1.—*Suggested Approach to Over-all Therapy of Hypertension Based on the Degree of Elevation of the Diastolic Blood Pressure.*

Severity of Disease	Initial Treatment	Adjunction Treatment
Labile hypertension: diastolic pressure< 120 mm. Hg., but >100 mm. Hg.	Rauwolfia serpentina	None
Fixed hypertension: diastolic pressure <120 mm. Hg. >100 mm. Hg.	Rauwolfia serpentina for three months	If response is inadequate to Rauwolfia add hydralazine or Veratrum
Fixed hypertension: diastolic pressure >120 mm. Hg.	Rauwolfia serpentina	Try hydralazine. If unresponsive, discontinue and titrate hexamethonium, pentolinium, or mecamylamine
Malignant hypertension	Rauwolfia serpentina + mecamylamine	
Hypertensive emergency	Reserpine parenterally, hexamethonium I. M. or continuous infusion I. V.	Veriloid I. M. or I. V. by continuous infusion

Table 1 suggests an approach to therapy of hypertension based on the elevation of the diastolic blood pressure.

Baylor University College of Medicine.

ABSTRACT OF DISCUSSION

AUDIENCE MEMBER: What is the role of sodium restriction in the treatment of hypertension?

DR. MOYER: Sodium restriction, when used as the only therapeutic measure to treat hypertension, is very difficult to regulate. It is necessary to keep the sodium intake below 600 to 800 mg. per day. This is difficult for most patients and only in rare instances will they be persistent enough to do it. When sodium restriction is used in combination with the various antihypertensive drugs, it frequently increases their effectiveness.

AUDIENCE MEMBER: Do you have any preference for available drugs in the treatment of hypertension?

DR. MOYER: Yes, in the treatment of hypertension, it is essential that the proper drug be selected for the type of hypertension being treated. For example, if the patient has only mild hypertension, the less potent drugs, such as Rauwolfia alone or in combination with hydralazine, can be used. However, if the patient has severe hypertension with a fixed diastolic pressure above 120 mm. of mercury and any evidence of malignant hypertension, then it is necessary to use a more potent agent. I prefer to use a ganglionic blocking agent such as mecamylamine, pentolinium, or hexamethonium in combination with Rauwolfia for the treatment of this type of disease.

AUDIENCE MEMBER: What are the side effects that are to be looked for and avoided in the use of drugs for hypertension?

DR. MOYER: The side effects for most of the drugs are numerous and the ones to be looked for particularly will depend on the drug. In the case of the ganglionic blocking agents, the most troublesome side effects are those of constipation and variability of response. This is due primarily to erratic absorption of the drug. Mecamylamine is the only ganglionic blocking agent which is completely absorbed from the intestinal tract. In the case of Rauwolfia, the most troublesome effect is that of agitated depression, which is occasionally observed. In the case of hydralazine, the troublesome effect is the cardiac stimulation, frequently producing angina pectoris.

AUDIENCE MEMBER: How do you adjust the dose of drugs in the therapy of hypertension?

DR. MOYER: With the Rauwolfia compounds the dose is usually fixed, and initially I give 2 mg. of reserpine a day or 8 mg. of alseroxylon (Rauwiloid) per day. After the maximum effect of the drug has been obtained, the maintenance dose can be dropped back to about one-half the initial dose. In the case of hydralazine, it is necessary to start in relatively small doses of about 25 mg. four times a day and gradually increase the dose at four to five day intervals until a maximum of 600 mg. per day is being used. In the case of pentolinium, hexamethonium, or mecamylamine, again the minimum effective dose should be the starting dose and then the dose is gradually increased until an adequate reduction in blood pressure is reached or prohibitive side reactions have ensued.

AUDIENCE MEMBER: How does pentolinium compare with hexamethonium in regard to efficacy and side effects?

DR. MOYER: In my experience, the results obtained with pentolinium and hexamethonium are almost identical. Although pentolinium is more potent and less of that drug is necessary, the same side effects are encountered and the incidence of response is essentially the same.

AUDIENCE MEMBER: In the treatment of malignant hypertension, which drugs are to be preferred?

DR. MOYER: It seems best to use Rauwolfia plus a ganglionic blocking agent such as pentolinium, hexamethonium, or mecamylamine. I prefer to use Rauwolfia plus mecamylamine. This is because mecamylamine is completely absorbed from the gastrointestinal tract and a predictable response can be obtained. The serious side effects that are encountered are constipation and excessive blood pressure reduction.

AUDIENCE MEMBER: What is your impression of the Veratrum alkaloids in hypertension?

DR. MOYER: The only place I find use for Veratrum alkaloids in hypertension is in continuous intravenous infusion to patients who are considered hypertensive emergencies and who do not obtain an adequate reduction when reserpine is given parenterally.

PROPANE MAY CAUSE FROSTBITE

Propane, increasingly used by farmers in tractor engines, can cause severe frostbite. Drs. G. B. Hubbard and Leland M. Johnson, Jackson, Tenn., reported a case of propane frostbite in a letter published in the April 23 issue of the *Journal of the American Medical Association.* They cited a case of a farmer whose hands were exposed to the gas for a few minutes while he was fueling his tractor. Four fingers had to be amputated and skin grafts applied even though he was treated an hour after the accidental exposure. The doctors urged that users of propane fuel be warned of the possible danger. Propane, stored as a liquid in a pressure tank, changes to a gas when pressure is released, producing a freezing temperature of —44 F.

At least 70 to 80 per cent of cancers of the large bowel and sigmoid are detectable or visible through the sigmoidoscope.—Editorial, Am. J. Surg. *88*:208 (Aug.) 1954.

SURGICAL TREATMENT OF PORTAL HYPERTENSION

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IN RECENT years patients with esophageal varices due either to cirrhosis of the liver or Banti's syndrome have come to be grouped together under the common physiopathologic denomination of portal hypertension. The similar manifestations of gastrointestinal hemorrhage, splenomegaly, and ascites are now recognized to be the result of some form of obstruction in the portal venous system and to reflect the effects of increased portal venous pressure.

There are two major types of portal system block: one in which the obstruction occurs as the result of intrinsic liver disease and affects the portal vein radicals within the liver and the other in which the venous occlusion occurs in any part of the portal system extrinsic to the liver.

The intrahepatic type of block is most commonly due to some form of cirrhosis of the liver. The extrahepatic type involves usually the portal vein itself or the splenic vein and has been found to be due to (1) thrombosis, (2) a congenital obliteration similar to that normally affecting the umbilical vein, or (3) cavernomatous transformation which is variously thought to be a true neoplastic process, a congenital anomaly, or simply a recanalization of an old thrombus. Thrombosis is most common and may occur spontaneously or may be related to previous trauma or inflammation.

Obstruction to portal blood flow and its resulting hypertension effects the formation of dilated collateral pathways. These are recognized clinically as hemorrhoids, the caput medusae, and most importantly as esophageal varices.

Patients with cirrhosis of the liver and intrahepatic portal obstruction have a short life expectancy and die prematurely as the result of (1) primary liver failure characterized by cholemia and uremia, (2) wasting ascites with intercurrent infection, or (3) massive hemorrhage from esophageal varices.

Patients with the extrahepatic type of block usually have little or no liver damage and have greater life expectancy but nevertheless frequently die from repeated gastrointestinal hemorrhage or live a life of chronic invalidism.

Gastrointestinal hemorrhage from esophageal varices is perhaps the greatest single factor determining life expectancy in patients with portal hypertension. It has been observed that about 40 per cent of these patients die as the direct result of bleeding from esophageal varices, and Snell has shown that between 50 and 60 per cent of patients will be dead within one year following a first hemorrhage.

These figures demonstrate clearly that if some method of control of the hemorrhagic tendency in these diseases is successful, a significant number of patients will survive for a longer period of time and the over-all mortality will be markedly reduced.

The hemorrhagic tendency is the result of a combination of local and systemic factors. Locally, there is a dilation of veins, resulting from the increased portal tension, with subsequent thinning and ulceration of the mucosa of the lower part of the esophagus. Rupture and hemorrhage may occur as the result of sudden increase in pressure or from peptic ulceration due to regurgitation of acid pepsin into the lower esophageal segment. Systemically, there is an alteration in the hemostatic mechanisms of the blood due to a thrombocytopenia secondary to hypersplenism and to a hypoprothrombinemia from impaired liver function.

Medical management, consisting primarily of dietary and substitution therapy, has proved moderately successful in delaying the onset of liver failure and alleviating the ill effects of recurring ascites, but it has proved dismally ineffective for the control of recurring or fatal bleeding.

At present no surgical procedures which will reverse the pathologic change in the liver have been devised. Although occasional instances of improvement in ascites have been reported following certain operations, it is probable that these represented periods of spontaneous remission. Ascites is largely the result of a fundamental alteration in plasma protein synthesis and related in only a minor way to increased portal tension. Surgical treatment then concerns itself primarily with salvage of the significantly large group of patients with gastroesophageal hemorrhage.

SURGICAL RISK

Before one can rationally contemplate the selection of a particular operation, some knowledge of the surgical risk to be incurred is essential.

Generally speaking, the differential diagnosis between intrahepatic and extrahepatic disease depends on the demonstrable degree of liver involvement, which in turn largly determines the patient's ability to withstand major surgery.

In patients with extrahepatic block, there is little or no liver impairment and the mortality of any type of operative procedure is low. The occurrence of hematemesis, splenomegaly, the blood picture of hy-

persplenism, and essentially normal liver function tests is sufficient evidence of diagnosis.

Conversely, in patients with intrahepatic block, the liver function tests are invariably abnormal and the operative mortality varies directly with the degree of liver damage. The following considerations should enter into the decision of whether or not to operate:

1. A plasma albumin level of less than 3 Gm. per 100 cc. is associated with a mortality rate approaching 75 per cent, whereas if the level is more than 3 Gm., the mortality rate is about 10 per cent.

2. The presence of ascites portends serious risk, but particularly so if it fails to respond to medical measures. If esophageal hemorrhage is severe, an operation of lesser magnitude may be selected and a calculated risk accepted.

3. A 3 plus or 4 plus cephalin flocculation result indicates serious liver damage and increased risk, but in the presence of a good plasma albumin level and the absence of ascites it may not necessarily contraindicate surgery.

4. A prothrombin time which remains prolonged more than four seconds above normal despite adequate vitamin K therapy increases the risk.

5. An elevation of the serum bilirubin above 1 mg. per 100 cc. does not influence the risk, providing other criteria are relatively normal.

6. Bromsulphalein retention at thirty minutes of between 10 and 30 per cent increases the hazard of surgery but only if correlated with other findings.

Obviously the criteria of operability should depend not upon the result of one test only, but upon a critical evaluation of the patient clinically and upon the balanced effect of all of these special tests. The occurrence of concurrent disease in the cardiovascular, renal, or pulmonary system may contraindicate major surgery. Careful preoperative preparation, chiefly pointed toward adequate blood replacement and storage of glycogen in the liver, will permit surgery to be safely performed in many cases of borderline eligibility.

OPERATIVE PROCEDURES

With these features in mind, we are now in a position to consider the principles and merits of the available operative procedures.

Currently acceptable procedures for the surgical control of gastroesophageal hemorrhage may be classified into two categories: (1) procedures which ablate the local source of bleeding and (2) measures which are designed primarily to reduce the portal hypertension and which in some instances correct the hematologic effects of the associated hypersplenism.

Ablation of Bleeding Source

Surgical measures designed to ablate the local source of hemorrhage have their greatest sphere of usefulness in the control of acute exsanguinating hemorrhage, in that when successful they permit salvage of the patient and preparation for more permanent measures later. These include (1) balloon tamponade, (2) esophagoscopic injection, (3) transesophageal ligation, and (4) gastroesophageal resection.

Balloon tamponade has been used successfully for the temporary control of massive bleeding. The adjunctive use of topical thrombin solution has enhanced its effectiveness. All patients with bleeding varices should receive trial by this method along with supportive measures. Occasionally the balloon is ineffective because of extension of the varices into the fundus and body of the stomach.

Esophagoscopic injection of sclerosing solution has been used in the past, but has never proved particularly effective for the control of acute hemorrhage or the prevention of subsequent recurrence. It is mentioned for the sake of completeness only.

Transesophageal ligation with multiple running sutures in the mucosa of the esophagus utilizing a thoracotomy approach has been used to obliterate the varices by Crile and Allison of Leeds with relative success. It seems that this procedure is particularly suitable and effective in controlling acute hemorrhage in severe risk patients in whom more conservative measures have failed. It is reasonable to assume that new varicosities will form and that subsequent recurrence will be frequent since the underlying inciting factors are unaltered. Moreover in the presence of gastric varicosities, it would be ineffective.

Total resection of the gastroesophageal segment is an operation of greater magnitude and hence of considerably greater mortality in these poor risk patients. This operation, of course, accomplishes complete removal of the bleeding source. If a sufficient amount of the stomach is removed, accompanied by splenectomy, portal tension is reduced by about 20 per cent of the portal inflow. Furthermore, resection of the vagus nerves and removal of the acid gland–bearing portion of the stomach neutralizes the gastric pouch contents, and although regurgitation occurs, the irritative effect of acid pepsin is abolished.

Obviously such an extensive operation in an exsanguinating patient with liver impairment will entail a high mortality. In the chronic bleeder with relatively good liver function, it may be the operation of choice, particularly so in those patients who have recurrent bleeding following a shunt procedure. However, again portal hypertension tends to persist, and recurrent bleeding may occur from congestion in

the lower gastrointestinal tract. In patients with cirrhosis, who are required to be on a high carbohydrate, high protein, high vitamin diet, the removal and displacement of the stomach may seriously limit their ability to eat and thus adversely affect the integrity of the liver. There has not been a sufficient series reported to permit proper long-term evaluation.

Reduction of Portal Pressure

Procedures designed to reduce portal pressure and/or control the effects of hypersplenism include: (1) splenectomy and splenic artery ligation, (2) portacaval and splenorenal shunts, and (3) hepatic and splenic artery ligation.

Splenectomy alone has been utilized for years. It theoretically is effective in that the portal inflow is reduced by 20 per cent, and it also corrects the thrombocytopenia due to hypersplenism, which reduces the likelihood of future chronic hemorrhage. In cases of extrahepatic block due to splenic vein thrombosis at a point distal to the coronary vein, splenectomy will effect a permanent cure; however, when all types of portal hypertension are included, recurrent hemorrhage follows splenectomy in from 35 to 50 per cent.

Splenic artery ligation without splenectomy accomplishes physiologically the same results as splenectomy and has the advantage of simplicity, decreased risk, and preservation of the venous collateral circulation as an escape valve and the splenic vein for future use in a shunt procedure.

Portacaval and splenorenal shunt procedures are generally thought to be the best available in the light of existing knowledge. These operations involve a variable risk, depending primarily on the degree of liver impairment.

Generally speaking, the operative mortality in the intrahepatic group is approximately 18 to 20 per cent, whereas in the extrahepatic group it is 3 to 7 per cent. The essential factor in determining long-term results is the continued patency of the veno-venous anastomosis and the quantitative reduction of portal bed tension.

Normally, portal pressure ranges from 100 to 150 mm. of water, but in portal block it may rise to 300 or 400 mm. of water. Since the venous pressure in the caval system is remarkably less, the direction of flow through a portal systemic shunt is from the portal to the systemic side at a relatively rapid rate, and this flow effects a decompression of the portal system. This rapidity of flow tends to inhibit the development of thrombotic occlusion. Since diversion of portal flow from the liver does not seem materially to decrease its functional capacity, it is not thought that liver disease is abetted by such a procedure. It has been shown, however, that liver regeneration is inhibited following the creation of such a fistula in dogs. More investigation is needed in this regard. Since it is possible to create a larger fistula utilizing the portal vein and vena cava, the incidence of thrombosis, and hence recurrent hemorrhage, is less than that following the small shunt created by splenorenal anastomosis.

In the intrahepatic group, portacaval shunt is usually anatomically feasible and, if too much separation exists, an autogenous venous graft may be used to bridge the gap. On the other hand, in the extrahepatic group, since the obstruction is commonly in the portal vein, it is necessary to perform splenorenal shunt after splenectomy. Needless to say, by current standards, this shunt is performed by an end to side of renal vein technique with preservation of kidney function. It is important in this regard to investigate by intravenous urogram the renal status of the patient in the preoperative period.

The shunt operations to date have been followed by the lowest incidence of recurrent hemorrhage, this being in the neighborhood of 9 per cent, and in most of these, the bleeding has not been massive. These results are comparable to those commonly acceptable for the operation for inguinal hernia.

Ligation of the common hepatic artery with concomitant ligation of the splenic artery in several patients with Laennec's cirrhosis recently has been reported as a successful procedure by Rienhoff and others. The technical simplicity of the procedure recommends itself as one that might be attempted before other more difficult and exhausting operations are performed, especially in extremely poor risk patients. The results to date are equivocal.

The rationale of this procedure is based on the fact that portal pressure is definitely lowered by hepatic artery ligation and is lowered still more by splenic artery ligation. Twenty-five per cent of the blood entering the liver comes from the hepatic artery at a pressure of 120 mm. of mercury to empty along with the portal vein inflow into a common sinusoidal and capillary bed where the vis a tergo of the hepatic inflow becomes transmitted to the portal system. Furthermore, this high arterial pressure increases the tissue tension of the fibrotic liver substance and hence further increases the resistance to the flow of blood to the liver from the portal vein. Ligation of the main hepatic artery abolishes this increment of resistance and thus lowers the portal bed pressure. It has long been thought that occlusion of the common hepatic artery was catastrophic. However, recently, it has been shown in the experimental dog when adequately treated with penicillin and streptomycin that the mortality is less than 30 per cent. Ravdin

has reported the successful ligation of the common hepatic artery for aneurysm in 3 patients. Apparently small collateral arterial channels dilate coming mainly from the left gastric and phrenic arteries, and perhaps they assist in preventing ischemic necrosis providing anaerobic bacterial autolysis is prevented by adequate antibiotic therapy.

Clinical results to date have been variable, and obviously much more investigation is needed in this direction.

SUMMARY

A review of the pathologic physiology of portal hypertension has been given.

The determination of surgical risk has been discussed.

The principles, rationale, and relative merits of various operative procedures have been considered.

The shunt operations or gastroesophageal resection in properly chosen patients affords the best results.

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Use of Arterial Homografts in 90 Peripheral Arterial Lesions

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ACCUMULATED experience during the past few years has established the fact that a diseased segment of artery in a patient can be successfully replaced by a normal artery (homograft) obtained at autopsy from another patient.[1, 3, 10] This method of treatment has made it possible not only to attack the disease process directly, but also to preserve or restore normal blood flow distal to the region of operation. Methods of preserving and storing arterial homografts have become sufficiently simplified to make them readily available as needed,[1] and this principle of therapy now has been successfully applied to most segmental arterial abnormalities.

After considerable experience with various methods of treating peripheral arterial lesions, we, like others,[10] are convinced that homograft replacement whenever possible is the superior form of therapy. The purpose of this communication is to present our experience with this form of treatment as employed in 90 lesions located beyond the aorta. This material includes arteriosclerotic occlusions, aneurysms, arteriovenous fistulas, and trauma.

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ARTERIOSCLEROSIS

The arteriosclerotic lesion producing arterial insufficiency of the lower extremity is located below the aorta in most instances.[5, 7] This lesion occurring as an occlusion is purely mechanical and is frequently segmental in nature with the vessel being patent above and below it.[6] This fortunate feature of the pathologic process makes it possible to bridge the occluded segment with a graft.

All patients with arterial insufficiency of the lower extremities associated with absent femoral or popliteal pulses are investigated with arteriography. Those

who show a patent artery of reasonable size below the occlusion are selected for operation (fig. 1). Practically all iliac and more than 50 per cent of the femoral occlusions surveyed in this manner have proved to be candidates for this procedure.

FIG. 1. Femoral arteriogram showing a segmental occlusion with normal patency of the artery above and below the occlusion.

Treatment by inserting arterial homografts was used in 67 arteriosclerotic occlusions, including 28 involving the iliac artery and 39 the femoral artery. In cases in which the occluded segment was less than 15 cm., it has been generally excised and replaced by the graft sutured end to end to the host artery

FIG. 2. Photograph made at operation showing a homograft inserted after excision of an arteriosclerotic occlusion.

above and below the occlusion (fig. 2). Longer segments have been simply by-passed by suturing the graft end to side to the patient's artery above and below the occlusion (fig. 3). This operation is done through two separate small incisions which are connected by a subcutaneous or subfascial tunnel made by blunt dissection through which the graft is drawn (fig. 4). This technique has proved superior to complete excision because less dissection is required and the circulation through the patient's own vessels is not sacrificed in that all collaterals are spared. This feature of the operation is extremely important because no patient has been made worse by the procedure even though it failed to restore a pulsatile blood flow distal to the occlusion in 3 cases. This is in contrast to the loss of one leg in the series in which excision and graft replacement was used.

Success of operation was determined by arteriography or the appearance of pulses distal to the occlusion not present before operation. A pulsatile blood flow was established distal to the disease process in all 28 iliac occlusions and in 34 of the 39 femoral occlusions. Clinical improvement in these cases was exceedingly gratifying. Intermittent claudication, rest pain, and ischemic ulcer pain were immediately relieved in all patients who had patent grafts. Thigh amputation was averted in 9 patients whose lesions on admission otherwise would have necessitated amputation.

No deaths and few complications occurred in this series. The one significant complication was gangrene of the foot that required low thigh amputation following an unsuccessful excision and graft. This has not occurred since the adoption of the by-pass technique of operation. More than half of these patients have been followed from six months to almost two years and no late failures have occurred.

ANEURYSMS

Aneurysms of the peripheral arteries are prone to the complications seen in this disease located elsewhere, namely, rupture, thrombosis, and pressure on neighboring structures. Thrombosis is the most common complication and in aneurysms of the femoral and popliteal arteries, this accident is associated with gangrene of the lower extremity in the majority of cases. Linton[8] in a review of the natural course of the disease in 22 extremities with popliteal aneurysms noted that 77 per cent of these limbs were lost and 26.6 per cent of these patients died from complications of this abnormality.

Until recently, the treatment of peripheral aneurysms has been sympathectomy followed by local ligation and excision.[8]

The incidence of amputation following this method of treatment has been low, but owing to interruption of the main arterial channel, intermittent claudication has been a frequent, troublesome, and even incapacitating complication. Prevention of these complications and preservation of normal function

may be readily achieved by treatment of this lesion with excision and homograft replacement. This has been our approach to this problem. In some cases when the aneurysm was small, continuity of artery was restored by end to end anastomosis of the patient's artery after excision of the pathologic segment. In 9 extremities, after 10 aneurysms were excised, the defect was of such length that homografts were required to maintain a normal blood flow (fig. 5). Two grafts failed, one from hemorrhage and the other from thrombosis. Both complications occurred early in the series and were due to correctable technical errors.

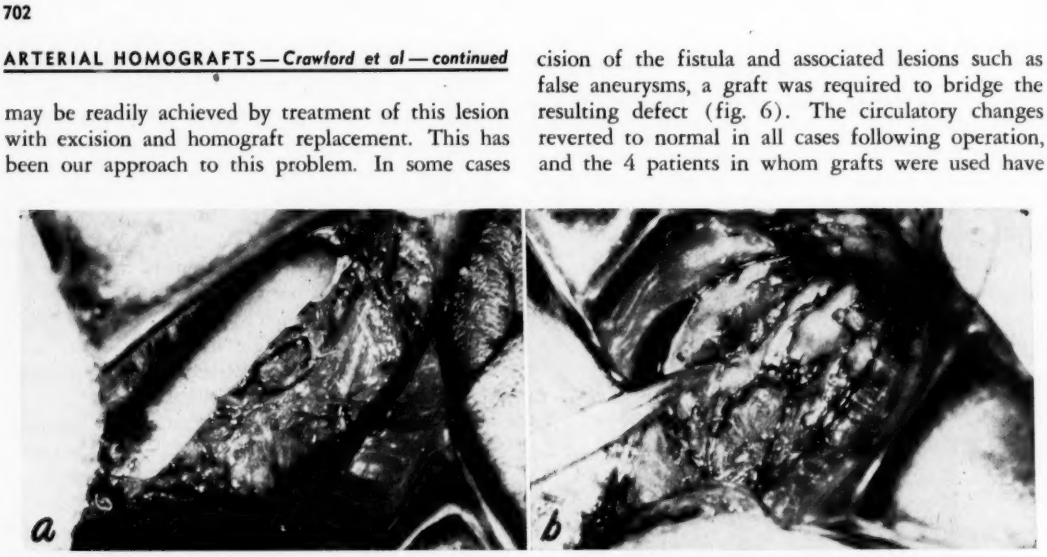

FIG. 3. Photographs made at operation showing a homograft by-passing an occluded segment. End to side anastomosis between graft and femoral artery is shown in *a*. End to side anastomosis between graft and popliteal artery is shown in *b*.

FIG. 4. Photograph of the lower extremity showing the location of the incisions used in a by-pass operation.

ARTERIOVENOUS FISTULA

The circulatory changes accompanying an arteriovenous fistula and their effect upon the heart are well known and need little discussion. It is important, however, to emphasize that these changes are completely reversible by closure of the shunt. In 16 such cases treated in the past three years, it was possible to close the fistula and reestablish blood flow in the artery when necessary by either simple closure of the defect in the artery and vein or by resection and end to end anastomosis. In 4 patients, after excision of the fistula and associated lesions such as false aneurysms, a graft was required to bridge the resulting defect (fig. 6). The circulatory changes reverted to normal in all cases following operation, and the 4 patients in whom grafts were used have continued to have normal pulses and function throughout the involved extremity.

TRAUMA

A study[2] of arterial injuries and subsequent amputation in World War II in which ligation of the involved artery was the accepted form of treatment serves as a good control for the treatment of these injuries by other methods. With simple ligation, for example, the incidence of amputation following wounding of the brachial artery was 26 per cent, femoral artery 53.2 per cent, and popliteal artery 72.5 per cent. Newer techniques now permit a more successful approach. Not only is lost blood replaced and bleeding controlled, but the arterial channel itself is preserved, thus saving limb as well as life. In approximately 75 cases of arterial injury this has been accomplished in most instances by primary repair of the patient's injured artery. In 10 patients homografts were required to bridge the defect in extensive arterial wounds. There were 3 brachial, 6 femoral, and 1 radial injury in this group. All grafts were patent at the time of discharge of the patients, and have continued to function in all but one. This graft became occluded more than a year after operation after a good collateral blood flow had developed and at this time continued to have palpable but diminished pedal pulses. This patient has intermittent claudication, but no patient in whom a graft was inserted has had an amputation.

SUMMARY

By using arterial homografts, segmental arterial lesions can be treated effectively by a direct surgical approach with restoration of arterial continuity and

normal function. Analysis of our experience in the use of this method in the treatment of 90 peripheral lesions is the basis of this article.

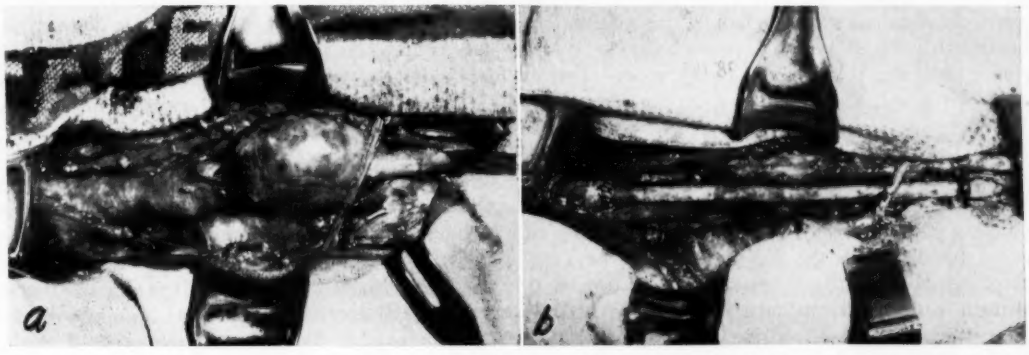

FIG. 5. a. Photograph made at operation showing a popliteal aneurysm.

b. Photograph made later in the same operation showing a homograft bridging the defect left by excision of the aneurysm.

This form of surgical therapy was employed in 67 arteriosclerotic occlusions, 28 of which involved the iliac and 39 the femoral artery. Short occlusions were excised completely and replaced by the graft, but in the majority of cases the occlusion was simply bypassed by anastomosing the graft end to side to the host artery above and below the lesion. This technique was found to be superior to excision because the operation was simple and collateral blood flow was not interrupted. All iliac occlusions and 87 per cent of the femoral occlusions were treated successfully, and the results obtained were superior to all other forms of therapy.

Ten peripheral aneurysms in 9 extremities were excised and the defect bridged with homografts. Two of these failed because of technical errors encountered early in this period, but in the others, peripheral blood flow was successfully maintained.

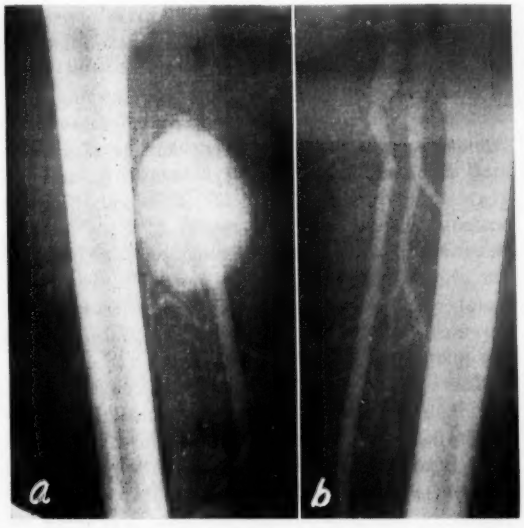

FIG. 6. a. Femoral arteriogram showing false aneurysm and arteriovenous fistula.

b. Femoral arteriogram after removal of the aneurysm and arteriovenous fistula and replacement by homograft showing vessel continuity.

In the treatment of 20 arteriovenous fistulas, homografts were required in 4 to maintain normal blood flow, while the others were treated by simple excision and suture repair. The circulatory changes were corrected in all, and the grafts have remained patent.

Arterial homografts were used to bridge 10 traumatic defects of major peripheral arteries with successful restoration of circulation in all.

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Cardiac Arrest

JOHN W. ELLIS, M. D., Sherman, Texas

THERE is nothing more catastrophic from the standpoint of the family, the surgeon, the anesthetist, and all persons involved than a sudden unexpected death in the operating room. This is especially true if the patient is a healthy person who is undergoing some minor elective operative procedure. The incidence of this occurrence, as will be discussed later, is so infrequent that the experience of any one surgeon or anesthetist in dealing with the problem need be small; however, the importance of being familiar with the condition cannot be overemphasized. Experience has shown that the time element is of the greatest importance, and no surgeon or anesthetist is able to act quickly enough unless he has previously gone through the problem in his mind and is acquainted with the planned steps which must be taken. I feel, therefore, it is of utmost importance for every surgeon, regardless of his specialty, to familiarize himself with the essential points concerning the diagnosis and treatment so that if he is suddenly brought face to face with this situation, he will have some well planned procedure to execute.

HISTORY AND INCIDENCE

In 1848 the first death under anesthesia occurred, and from early descriptions this was probably from a cardiac arrest; however, it was not until 1874 that the first demonstrated cardiac restoration by manual massage was reported. Again in 1889 another unsuccessful attempt at cardiac massage was carried out, and it was not until 1901 that the first successful restoration by cardiac massage was accomplished by Iglesrud. From this time on, increasing numbers of cases have been reported.

The incidence of cardiac arrest differs with reporters; however, the usual incidence reported varies from around 1 case per 1,000 operations to 1 case per 2,000 operations. There is a variation in the incidence depending upon the type of surgery; but no operation, no matter how trivial, can be stated to be entirely free of the danger of cardiac arrest. Cooley and Blalock reported an incidence of almost 6 per cent cardiac arrest occurring in patients undergoing surgery for pulmonic stenosis, and there are similar high incidences of the condition reported in other types of intrathoracic surgery. There is a relatively high incidence of cardiac arrest reported in children between the ages of 1 and 5 years; however, the incidence appears to be at its greatest level at the fourth to sixth decades of life, but this can be explained by the fact that most surgery is done on this age group; consequently, it remains that the youngest and oldest surgical patients are the most susceptible.

There are no exact figures available for duration of life after cessation of circulation in man, but it has been shown that the brain is especially sensitive to oxygen lack or anoxia. Hawkins and McLaughlin noted that the basic oxygen requirement for the brain is 1,400 cc. of blood per minute, and that the brain, which represents one-fiftieth of the body weight, receives exactly one-third of the left ventricular output.

In experimental animals it has been shown that after stoppage of blood flow to the brain of two to three minutes' duration, 94 per cent of all animals recover completely. In animals with stoppage of circulation ranging from three and one-half to five and three-fourths minutes the animals were wildly excited, showed cerebral disturbance for periods varying up to one to two weeks, but eventually completely recovered. In stoppage of circulation of six to seven minutes, only 30 per cent survived, and those that did survive were practically decerebrated animals. With stoppage of more than eight minutes, no animal survived.

In the articles I surveyed there were varying opinions as to the lengths of time that the human brain could survive without permanent damage after cessation of blood flow. It is the consensus of most reporters that cerebral anoxia of ten seconds produces unconsciousness; anoxia of twenty to thirty seconds, cessation of any electroencephalographic changes; and for three to five minutes, irreversible pathologic changes in the cerebrum. Others report recovery after seventeen minutes, but this is the exception and not the rule.

There is very little damage due to anoxia demonstrable in other organs because of all tissues the brain is the most vulnerable to anoxia. This explains the cases in which cardiac arrest has left the patient with permanent brain damage or as a mere vegetative organism, but with normal muscular and other organic functional ability.

ETIOLOGY

Preexisting Conditions.—It has been shown conclusively that any preexisting disease of the heart increases its susceptibility to cardiac arrest. The normal heart has been shown to have a marked resistance to experimental attempts to precipitate arrest by various laboratory procedures. Conditions which greatly re-

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duce this resistive property of the myocardium include coronary disease, myocarditis, valvular heart disease, heart block, myocardial hypertrophy, arrhythmias, pericardial effusion, and constrictive pericarditis.

Similarly, diseases of the respiratory system which lead to poor exchange or diminished oxygen are important factors in rendering the heart susceptible to standstill. These may include hydrothorax and emphysema.

Obesity and abdominal tumors likewise are conditions which predispose to cardiac arrest.

Precipitating Factors.—Respiratory depression or respiratory obstruction from any cause will make the heart more irritable because of hypoxia. There are many things which can tend to create this situation, some of which are shock, hypotension, anemia, excessive depth of anesthesia, excessive narcotics, paralysis of the respiratory muscles due to over-curarization, and unusual surgical positions (steep Trendelenburg, acute lithotomy, and lateral and prone jacknife).

Practically all of the conditions listed under hypoxia are also observed to cause hypercapnia, another condition which may precipitate cardiac arrest. Other factors may exist, for example, poor or exhausted soda lime in the anesthesia machine, mechanical defects in the anesthesia machine, or improper masking of the ether cone in open drop anesthesia.

It has been shown conclusively that reflexes per se should not by themselves cause cardiac arrest; however, the vago-vagal reflex which is stimulated in manipulation around the hilum of the lung or manipulation of a fracture or abdominal viscus, when referred to a myocardium which previously has been subjected to either one or several of the previously mentioned etiologic factors may be of sufficient degree to bring about arrest. Attempts to create arrest in animals by vagal stimulation alone have not been successful, but in the same animals with a hypoxic myocardium, stimulation of this reflex has at times successfully caused arrest. It is, therefore, of utmost importance that a correct plane of anesthesia, which is consistent with the work at hand be administered, and local block should be administered before doing procedures which would stimulate these reflexes when the anesthesia plane is not at the proper depth. It is felt that it is because of these factors that so many of the cases of cardiac arrest which have been reported are either during the early administration of an anesthesia or when the patient is beginning to come out of anesthesia.

Any acute myocardial failure which occurs as a result of improperly administered anesthesia or in any patient with low blood volume can precipitate cardiac arrest.

Mechanical factors such as tension, traction, or torsion applied extrinsically or intrinsically to the heart or blood vessels may interfere with inflow and outflow of blood and thus lead to cardiac arrest. Pulmonary infections or spontaneous pneumothorax may be important factors.

Some anesthetic agents are known to increase myocardial irritability and to result in exaggerated response of the myocardium to circulating epinephrine; cyclopropane and chloroform are examples of these agents. Therefore, great caution should be exercised in the administration of epinephrine by the anesthetist if cyclopropane is the anesthetic agent.

DIAGNOSIS

Early diagnosis is a prerequisite to recovery. When one already has access to the abdomen, it is relatively simple to palpate for an aortic pulsation. The signs and symptoms of cardiac arrest are relatively conspicuous and should be watched for at all times during administration of any anesthetic. These consist of (1) absence of pulse in any artery, (2) cessation of heart beats, (3) cessation of blood pressure, and (4) cessation of wound bleeding. The surgeon and anesthetist should be in communication with one another at all times as it is usually the anesthetist who observes the calamity first.

There are several things which should not be done when cardiac arrest occurs, and I think it would be well to emphasize them:

1. Time should not be lost in searching for heart beats with the stethoscope.
2. The surgeon should not attempt to make a diagnosis by waiting for electrocardiographic evidence.
3. He should not delay in waiting for further consultation.
4. He should not attempt to needle a heart.
5. He should not compress the chest.
6. He should not dilate the rectum.
7. He should not give intra-arterial transfusions.
8. He should not try to give digitalis as none of the cardiac glycosides act fast enough to be of any value.

TREATMENT

In treatment of cardiac arrest the importance of having the diagnosis constantly in mind cannot be overemphasized, and again I would like to reiterate that every surgeon should be familiar with the steps which should be taken when cardiac arrest occurs.

There are two distinct steps which must be taken immediately upon the recognition of cardiac arrest. The first phase consists of a guarantee of oxygen by means of artificial respiration. The second phase entails a transport system for the oxygen by manual massage of the heart. These two phases must be accomplished within three minutes of the arrest or at least within two minutes after making the diagnosis.

As soon as cardiac arrest is even suspected, a number of actions must be instituted. One person should take charge and remain in charge throughout the

treatment phase. Anesthetic agents are discontinued at once and oxygen is administered in the flow of 10 to 20 liters per minute. If one is not already in position, an endotracheal tube should be passed as soon as possible, but in early stages if the airway is free and respiratory exchange adequate, it is best to wait for an opportune time for passage of the endotracheal tube. No degree of respiratory obstruction can be tolerated. In the absence of an endotracheal tube, oxygen may find its way into the stomach, leading to extreme gastric distention and further cardiac embarrassment; therefore, after tracheal intubement, a Levine tube should be passed into the stomach, but this should never be done if it interferes with artificial respiration. Some person in the operating room who is not required for other duties should count out the time at 15 second intervals so that everyone will know about the time element. The operating table should be tilted 5 to 7 degrees to a head-down position. If the surgeon is already working in the abdomen, he should attempt to palpate the heart through the diaphragm to see if there is any heart action; occasionally the mere mechanical stimulation through the diaphragm will re-start the heart.

After the diagnosis of definite cardiac arrest has been made, no time can be lost. The chest should be opened without waiting for sterilizing preparation or gloves, using a thoracic route with an incision from the sternum to the anterior axillary line between the fourth and fifth ribs. Bleeding will not be important. It is preferable to sever the costosternal attachments of the fourth and fifth ribs because if this is not done, extreme pressure is exerted on the surgeon's wrist; some writers recommend the use of a small wedge as a rib spreader to prevent this pressure from occurring. Manual compression of the heart is begun immediately. In carrying out the manual systole the heart is grasped in the right or left hand and compressed in such a way forcefully to empty both chambers. This maneuver is carried out by motion at the wrist and consists of a milking action which tends to shift the blood from the apex to the base of the heart. The culmination of efficient manual systole is palpation of an adequate peripheral pulse with each manual compression. Massage should be carried out at a rate of approximately 70 compressions per minute; this will necessitate two surgeons alternating at approximately five minute shifts. With completion of satisfactory massage the surgeon has overcome the two most dangerous problems in asystole and has developed an artificial respiratory and circulatory system.

It is now important to determine whether the heart is at an absolute standstill or in a state of ventricular fibrillation. Fibrillation will occur in a ratio of one to ten to cardiac standstill. If fibrillation is present, manual systole is of little value and defibrillation is urgent. Some authors advise 20 cc. of procaine in a 1 per cent solution injected in an arm vein to assist in decreasing myocardial irritability; this can be repeated at three minute intervals for several repetitions. The best results, however, have been obtained through the use of an electrical defibrillator. Several of these devices are on the market and function satisfactorily, but a simple and economical one can be constructed in the hospital workshop. A good defibrillator should have an isolation transformer attached to reduce the likelihood of shocking the operator. It should also have a timing device to measure and control the duration of the shock. The electrodes should be of sufficient size to allow a large area of myocardium to be compressed between their surfaces. The surgeon should make sure the electrode handles are insulated, and as a further precaution he should wear two pairs of rubber gloves. The anesthetist should not touch the table or the patient at the time the shock is administered. If fibrillation is present, it will be manifested by incoordinate movements of the myocardium. The muscle fiber will show a continuous quivering which gives the appearance of a mass of writhing worms. The purpose of the defibrillator is to bring these muscle fibers to a refractory state where it will then be possible for a single focus to take over and serve as pacemaker. It is important that manual compression be given between shocks. It is important to remember that Adrenalin must never be used in ventricular fibrillation as it would only increase the myocardial irritability.

In cardiac arrest the purpose of treatment is almost directly opposite. It is the purpose to increase the myocardial sensitivity; consequently, procaine is contraindicated. Adrenalin in doses of .5 cc. of 1 to 1,000 solution mixed in 20 cc. of distilled water should be injected into the left auricle; this can be repeated one time if no results are obtained. If this is not effective, calcium chloride, 2 to 10 cc. of a 10 per cent solution, should be injected into the left ventricle, and if no results are obtained from these two measures, electrical stimulation should be instituted. Supportive measures should be used as indicated; however, all intravenous fluids should be given at a slow rate so as not to overload the heart.

It is always best to wait at least 10 to 15 minutes before closing the chest as in some cases reported the cardiac arrest recurred after approximately twelve minutes of normal rhythm.

SUMMARY

All surgeons, including the occasional operator, should be familiar with cardiac arrest and the measures which must be taken when this catastrophe

occurs. All hospital personnel also should be made familiar with a standing operating procedure which must be instituted as soon as the diagnosis is made. All operating rooms and recovery rooms should have a cardiac arrest kit available which should contain the following simple items: scalpel, three or four hemostats, endotracheal tube, two 10 cc. syringes with four long 22 gauge needles, Adrenalin 1 to 1,000 solution, calcium chloride 10 per cent solution, and a defibrillator. When these measures have been properly instituted, I believe that the mortality in cardiac arrest will be appreciably diminished.

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CASE REPORTS

Phlegmasia Cerulea Dolens

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ALTHOUGH the chemical, physiologic, and pathologic mechanisms of intravascular clotting have not been elucidated completely, various clinical syndromes of intravascular clotting of peripheral vessels are recognized by their respective clinical manifestations. Acute ileofemoral thrombophlebitis (phlegmasia alba dolens) occurs frequently and usually is seen in the postpartum period or as a postoperative complication of surgery. This condition generally subsides without threat of gangrene of the involved extremity. There is, however, an ever increasing number of patients developing gangrene of the extremity following what originally appeared as an innocent thrombophlebitis. Although this situation is relatively unusual, it is well documented as phlegmasia cerulea dolens, blue phlebitis, or acute massive venous occlusion. The recognition of this condition is important as its occurrence signifies a potential hazard to the future viability of the limb involved.

Theoretically, gangrene of an extremity may result from (1) occlusion of the arterial system (seen clinically in acute arterial occlusion, embolus, or thrombosis); (2) occlusion of the venous system (seen clinically in acute massive venous occlusion); and (3) occlusion of both systems. In arterial occlusion, gangrene develops from inadequate blood delivery to the tissues. In acute massive venous occlusion, gangrene represents a failure of tissue oxygenation even though there is continuous arterial blood delivery but a variable degree of decreased blood egression. The clinical picture portraying each of these two opposite physiologic manifestations is distinct. In acute arterial occlusion, the principal findings are pain, pallor, diminution in skin temperature, absent pulsations, anesthesia, and loss of motor power of the involved limb.

The clinical picture of thrombophlebitis resulting in gangrene may proceed through three distinct phases: (1) phlegmasia alba dolens (milk leg), (2) phlegmasia cerulea dolens (blue phlebitis, acute massive venous occlusion), and (3) gangrene. The process under treatment may not progress to gangrene. The phase of phlegmasia alba dolens may precede the findings of phlegmasia cerulea dolens by several hours to several days. On the other hand, the thrombophlebitic process initially may be heralded by the clinical picture of phlegmasia cerulea dolens. Pain is a constant feature, usually sudden in onset, excruciatingly severe, and more intense than in ordinary thrombophlebitis. Pain, also, is such that it involves the whole leg and is not isolated over any single vessel or group of vessels. Cyanosis appears early, and it involves the whole limb. Venous congestion and swelling, which can be correlated with the degree of venous obstruction, soon follow; and these findings give an unusual feel to the limb, being expressed by some authors as "a woody consistency."[1]

Usually, the exact diagnosis of any peripheral vascular insult is not difficult. At some stage in the process, confusion may occur in differentiating acute arterial occlusion and "reflex arterial spasm associated with overwhelming acute thrombophlebitis." In this latter instance, the peripheral arterial pulsation may be absent and the extremity may be cool temporarily. Generally, lumbar sympathetic block promptly reestablishes arterial pulsation, and the clinical picture then assumes other evidences of acute thrombophlebitis—such as distention of the venous system and the presence of a positive Homans' sign.

The extremely unusual situation of "acute peripheral circulatory failure caused by acute thrombo-

From the Department of Internal Medicine (Dr. Haines and Dr. McMillan) and from the Department of Surgical Pathology and Pathologic Anatomy (Dr. Stinson) of the Scott and White Clinic.

phlebitis"[4] may be considered. Here, however, arterial pulsations are absent in all four extremities, but reappear with adequate control of associated shock. As phlegmasia cerulea dolens implies complete venous occlusion, the syndrome may be substantiated only at postmortem examination. With the more frequent use of arteriography, however, correct diagnoses will be established more often antemortem, as the patency of the arterial tree can be revealed despite absent pulsations. Haimovici[3] has classified thrombophlebitis with gangrene into two main clinical types: (1) cases with palpable distal arterial pulsation and (2) cases without palpable distal arterial pulsation. It is in this latter group that arteriography is of great value.

The exact etiology of phlegmasia cerulea dolens has not been determined; however, several physiologic processes seem to be active. Clinically, it appears that venous stasis is of primary importance and that arterial spasm and various degrees of circulatory arrest are secondary. The production of this syndrome appears to depend not only on the amount of obstruction to the venous bed, but, of more importance, on the suddenness with which it occurs. Slow obstruction may give time for development of adequate collateral circulation.

Therapy should be directed toward the prevailing abnormal physiologic processes. Since venous engorgement is prominent, Veal and his associates[5] have proposed, and utilized with good results, marked elevation and manual active exercise to the involved limb. Manual active exercise is rationally applied to propel venous blood forward into patent veins of the groin and abdomen by muscular contraction and to permit the simultaneous inflow of needed arterial blood. They have demonstrated that when blood begins to flow, the acute symptoms disappear. At the same time, other measures including attempts to relieve arterial spasm by lumbar sympathetic block, utilization of vasodilating drugs, and use of anticoagulants to prevent further intravascular clotting should be instituted. Strenuous measures should be directed toward the underlying condition responsible for the vascular disturbance. If the patient is seen after gangrene is evident, then only supportive measures should be instituted and amputation at the most favorable site should be done as soon as possible.

In addition to thrombophlebitis, phlegmasia cerulea dolens has been recorded in a variety of conditions—in association with visceral malignancy, infections as an aftermath of trauma, postchemical thromboses, plugging of major veins of the thigh and pelvis by shifting thrombus, accidental surgical ligation of a large venous channel such as the inferior vena cava, and underlying diffuse vascular disease such as Buerger's disease. Should venous occlusion occur after accidental ligation of a major vein, immediate surgical release of the obstruction should be attempted.

CASE REPORTS

CASE 1.—The patient, a 47 year old white man, was seen at this clinic in March, 1954. His major complaint concerned right upper quadrant pain associated with chronic gaseous indigestion. A survey of his past history revealed that 18 years previously, celiotomy yielded a "benign neuroma" and that he had suffered from attacks of paroxysmal auricular tachycardia. At the original physical examination, right upper abdominal tenderness was the only significant finding. Cholelithiasis was verified by roentgen examination and cholecystectomy was performed. At the time of surgery, a retroperitoneal mass was found at the level of the second lumbar vertebra. This mass was partially excised and pathologically described as "neurofibroma." Immediate postoperative complications, controlled by appropriate therapy, included a transient low salt syndrome and several episodes of paroxysmal auricular tachycardia.

Fifteen days postoperatively, the patient experienced a transient episode of pain and tenderness in the calf of the left leg, but no definite syndrome developed. Forty-eight hours later, however, this patient exhibited mild tenderness and minimal edema of the calf of the right leg. The venous pattern of the calf increased, and a diagnosis of thrombophlebitis was made. Within a period of one hour, these symptoms progressed with the swelling extending to the level of the right inguinal ligament. There was definite uni-

FIG. 1. Case 2. Photograph showing gangrene of the right foot, with swelling of both lower extremities.

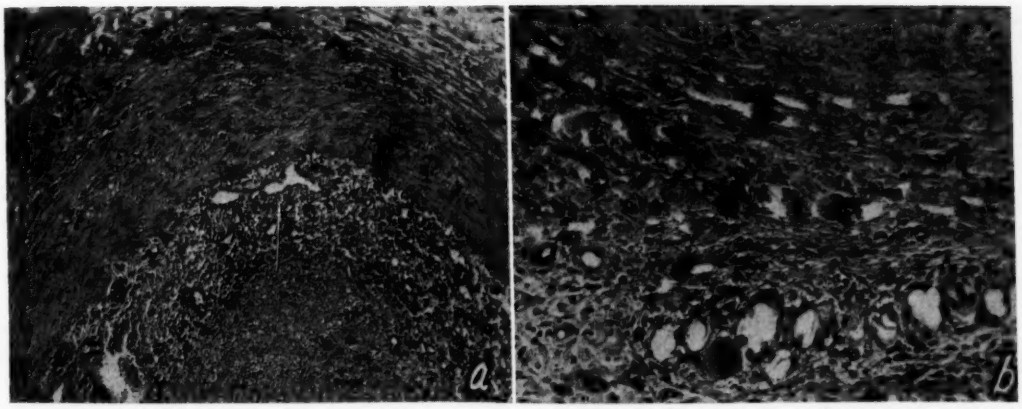

FIG. 2. Case 2. Thromboangiitis obliterans of artery.
a. A proliferative phase in organization of the thrombus with early recanalization. Note the foreign body giant cell. x 65.

b. Higher power of *a* showing detail of the foreign body giant cell. x 125.

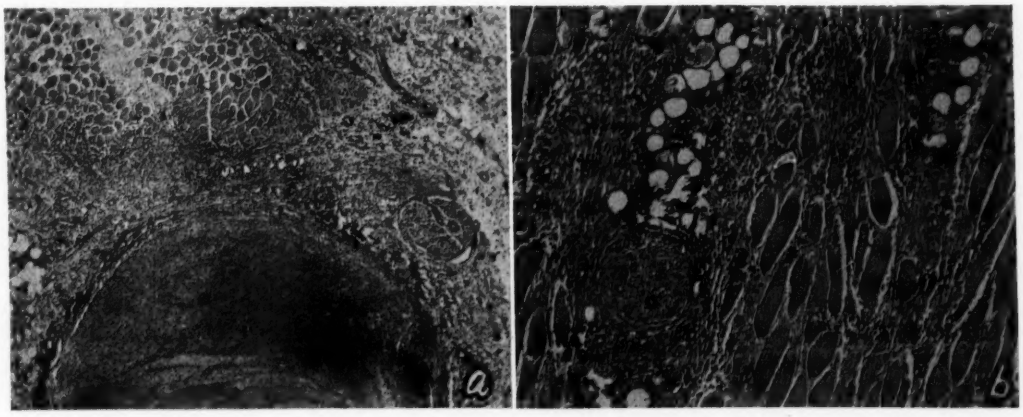

FIG. 3a. Case 2. Thromboangiitis obliterans of vein. Early organization of thrombus. x 24.

b. Case 2. Thromboangiitis obliterans of muscle. Inflammation and necrosis. x 64.

lateral cyanosis, marked exacerbation of pain, diminution in temperature of the extremity, and a definite alteration in the consistency of the tissue. Several observers noted the right calf to be "woody" in consistency and firm to palpation. Arterial pulsations were diminished in volume but were present on repeated examinations. The patient developed definite systemic manifestations including tachycardia, perspiration, and a very apprehensive, anxious appearance. The blood pressure remained at previously recorded levels. Immediately, a right lumbar sympathetic nerve block was accomplished, and procaine (10 cc. of 1 per cent) was instilled hourly through a local indwelling catheter. The extremity was elevated to 45 degrees. After nine hours, improvement was noted. Arterial pulsation increased, and cyanosis and edema subsided. On the following day, therapeutic doses of heparin and tromexane were prescribed. Tromexane was continued during the period of hospitalization, approximately three weeks, and for six weeks thereafter. An Ace bandage support was applied before dismissal of the patient.

Upon observation about nine weeks after this episode, minimal venous insufficiency remained. (The calf of the right leg measured one and one-half inches larger than the left calf.) There was also some dependent cyanosis. Peripheral arterial pulsations were normal.

CASE 2.—The patient, a 14 year old youth, reported to this clinic in March, 1952. Pain in the right inguinal area, followed by pain and swelling in the right leg, had begun seven days previously. Four days prior to entry, a diagnosis of thrombophlebitis was made, and a right lumbar sympathetic nerve block was performed. According to the patient's parents, he did well until the day of admission, when he complained of a marked increase in pain. At that time, the skin of the right foot began to display a mottled, diffuse, bluish-purple discoloration.

On admission, the patient was an acutely ill boy. The essential physical findings were limited to the right lower extremity. The limb was painful and warm. It was markedly distended to the level of the right inguinal ligament, and a definite superficial venous pattern was displayed over the right anterior upper thigh. There was cyanosis of the right foot. Pulsations in the right femoral and right popliteal arteries were normal; and, although edema existed, slight pulsations in the right anterior and posterior tibial arteries were detectable. The left limb and its arterial pulsations were normal.

Initial treatment was limited to a right lumbar sympathetic nerve block. An indwelling catheter was placed in the lumbar area, and through it procaine (5 cc. of 1 per cent) was injected every hour. Supplementary therapy included antibiotics (Dicrysticin), papaverine, intravenous alcohol, heat to the abdomen, and heparin (50 mg.) every four hours until subsequent surgical intervention.

Within six hours after admission, anesthesia and loss of motion of the toes of the right foot occurred. Also, the initial cyanosis noted on admission had progressed to obvious gangrene of the right foot, with formation of various-sized blebs over the right foot (fig. 1). A level of demarcation became apparent at the right mid-calf. Amputation of the right lower extremity was planned; however, the patient developed signs of thrombophlebitis in the left calf with a positive Homans' sign, swelling of the left calf, and an increased warmth of the left foot. Therapy was continued and signs of thrombophlebitis of the left calf gradually subsided. In April, 1952 (about three weeks after admission), the right lower leg was amputated. After a surprisingly uneventful recovery, the patient has had a suitable prosthesis fitted, and he has returned to normal activity.

Pathology.—The gross appearance of the amputated limb was as described clinically. In dissection of the limb, segments of both the arteries and the veins were found to be involved in an occlusive process. Segments of the peroneal and posterior tibial arteries were involved, as were the branches of the anterior tibial artery. In addition to the branches of smaller veins, the small saphenous vein was occluded by a soft thrombosis interpreted as being of recent origin.

Histologic sections through the various vessels at different levels showed acute and subacute changes. Recent thrombi occluded the lumen of the vessels, and there were endothelial cells and fibroblasts within the thrombi. Polymorphonuclear leukocytes and lymphocytes were present in some of the thrombi, and a few were present in the walls of the vessels. Giant cells of the foreign body type were present in the periphery of some of the thrombi, a characteristic originally described by Buerger[2] (fig. 2 and 3). The internal elastic membrane was well preserved in the involved vessels, and there was little or no change in the media other than some dilatation of the capillaries. The adventitia of most of the vessels showed some lymphocytic infiltration, present for the most part around vascular channels.

Thrombi observed were in different stages of development. In some, organization was in a very early stage, with the presence of fibroblasts. In others, complete organization had occurred and the connective tissue had undergone a moderate degree of recanalization. There was no destruction, bulging, or eccentric placement of the wall of the vessel such as would characterize periarteritis, nor were atheromatous plaques or areas of calcification present.

As would be expected in a process of this type, marked inflammation and destruction of tissues in the involved limb were secondary to the vascular occlusion. It was the opinion of the pathologists that this represented thromboangiitis obliterans, Buerger's type of vascular occlusion.

The pathologic findings of typical thromboangiitis obliterans were unsuspected in view of this patient's age, his freedom from previous vascular insufficiency symptoms, and the presence of arterial pulsations during his illness. Microscopically, arterial and venous involvement was evident; however, grossly the venous channels were occluded by recent thrombi. Although the pathologic manifestations represented Buerger's disease, with involvement of both the arterial and venous channels, clinically this was a case of massive venous occlusion. This diagnosis was based upon the clinical evidence of wet gangrene associated with blister formation and cyanosis of the involved limb. During this illness, the patient experienced an episode of acute thrombophlebitis of the other lower extremity.

SUMMARY

We have presented 2 cases of phlegmasia cerulea dolens, or acute massive venous occlusion. In case 1, the patient had an uneventful recovery. In case 2, the patient was not seen until gangrene was incipient, and amputation became necessary. Microscopic changes of the underlying vascular disease were present, with thromboangiitis obliterans involving both the arterial and the venous systems. Both patients experienced multiple episodes of thrombophlebitis.

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AMERICAN HOSPITAL ASSOCIATION

United States hospitals cared for 20,345,431 patients in 1954, more than in any previous year, the American Hospital Association has announced. This was an increase of 161,604 over 1953's total. A total of 3,342,599 babies were born in hospitals last year, a rise of 233,529 over the 1953 figure. The nonprofit general hospitals which care for the great majority of the acute, short-term cases in the nation spent $22.78 every day for each patient, and the average cost per patient stay in these hospitals was $171 as compared with $160 in 1953.

EASTER SEAL SOCIETY

The National Society for Crippled Children and Adults, the Easter Seal Society, will meet November 28-30 in Chicago. Top authorities in rehabilitation, medicine, welfare, business, industry, and government will participate in this year's program marking the society's thirty-fifth year of service to crippled children and adults across the nation. The society is a nationwide federation of Easter Seal affiliates. These societies provide needed services in the fields of health, welfare, education, recreation, employment, and rehabilitation.

NEWS

COMING MEETINGS AND CLINICS

Texas Medical Association, Galveston, April 21-25, 1956. Dr. J. Layton Cochran, San Antonio, Pres.; Mr. C. Lincoln Williston, 1801 North Lamar Blvd., Austin, Executive Secy.

American Medical Association, Clinical Meeting, Boston, Nov. 29-Dec. 2, 1955. Dr. Elmer Hess, Erie, Pa., Pres.; Dr. George F. Lull, 535 North Dearborn, Chicago 10, Secy.

NATIONAL AND REGIONAL

American Academy of Allergy, St. Louis, Feb. 6-8, 1956. Dr. Stanley F. Hampton, St. Louis, Pres.; Dr. Frances C. Lowell, 65 E. Newton, Boston, Secy.

American Academy of Dermatology and Syphilology, Chicago, Dec. 3-8, 1955. Dr. Arthur C. Curtis, Ann Arbor, Pres.; Dr. James R. Webster, 55 E. Washington, Chicago 2, Secy.

American Academy of General Practice, Washington, D. C., March 18-23, 1956. Dr. John R. Fowler, Barre, Mass., Pres.; Mr. Mac F. Cahal, 406 W. 34th St., Kansas City 2, Executive Secy.

American Academy of Obstetrics and Gynecology, Chicago, Dec. 13, 1955. Dr. William F. Mengert, Dallas, Pres.; Dr. C. Paul Hodgkinson, 116 S. Michigan Blvd., Chicago 3, Secy.

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 9-14, 1955. Dr. Algernon B. Reese, New York, Pres.; Dr. W. L. Benedict, 100 First Ave. Bldg., Rochester, Minn., Secy.

American Academy of Pediatrics, Chicago, Oct. 3-6, 1955. Dr. A. Crawford Bost, San Francisco, Pres.; Dr. E. H. Christopherson, 610 Church, Evanston, Ill., Secy.

American Association for Thoracic Surgery, Miami Beach, Fla., May 7-9, 1956. Dr. Richard H. Meade, Grand Rapids, Mich., Pres.; Dr. Paul C. Samson, 3959 Happy Valley Rd., Lafayette, Calif., Secy.

American Association of Genito-Urinary Surgeons, Oyster Harbors, Mass., June 4-6, 1956. Dr. Norris J. Heckel, Chicago, Pres.; Dr. John A. Taylor, 2 E. 45th St., New York 22, Secy.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons. Dr. Thaddeus L. Montgomery, Philadelphia, Pres.; Dr. F. R. Lock, Bowman Gray School, Winston-Salem, N. C., Secy.

American Cancer Society. Dr. Guy Aud, Louisville, Ky., Pres.; Mr. M. R. Runyon, 47 Beaver, New York, Executive Vice-Pres.

American College of Allergists, New York, April 15-20, 1956. Dr. Lawrence J. Halpin, Cedar Rapids, Iowa, Pres.; Dr. Fred W. Wittich, 401 La Salle Medical Bldg., Minneapolis 2, Secy.

American College of Chest Physicians, Chicago, June 7-10, 1956. Dr. James H. Stygall, Indianapolis, Pres.; Mr. Murray Kornfeld, 112 E. Chestnut, Chicago 11, Executive Secy.

American College of Physicians, Los Angeles, April 16-20, 1956. Dr. George F. Strong, Vancouver 1, B. C., Pres.; Mr. E. R. Loveland, 4200 Pine, Philadelphia 4, Secy.

American College of Radiology, Chicago, Feb. 10-11, 1956. Dr. Warren W. Furey, Chicago, Pres.; Mr. W. C. Stronach, 20 N. Wacker Dr., Chicago 6, Executive Secy.

American College of Surgeons, Chicago, Oct. 31-Nov. 4, 1955. Dr. Alfred Blalock, Baltimore, Pres.; Dr. Michael L. Mason, 40 E. Erie, Chicago 11, Secy.

American Congress on Obstetrics and Gynecology. Dr. R. Gordon Douglas, 116 S. Michigan Ave., Chicago 3, Chm.

American Congress of Physical Medicine and Rehabilitation. Dr. William D. Paul, Iowa City, Pres.; Dr. Frances Baker, 1 Tilton Ave., San Mateo, Calif., Secy.

American Dermatological Association. Dr. V. Pardo-Castello, Havana, Cuba, Pres.; Dr. J. Lamar Callaway, Duke Hospital, Durham, N. C., Secy.

American Gastro-Enterological Association, Atlantic City, N. J., April 27-28, 1956. Dr. Robert Elman, St. Louis, Pres.; Dr. H. Marvin Pollard, University Hospital, Ann Arbor, Mich., Secy.

American Gynecological Society, Washington, D. C., May 21-23, 1956. Dr. Isidor C. Rubin, New York, Pres.; Dr. John I. Brewer, 104 S. Michigan Ave., Chicago, Secy.

American Heart Association, New Orleans, Oct. 22-26, 1955. Dr. E. Cowles Andrus, Baltimore, Pres.; Mr. Irving Hexter, 44 E. 23rd, New York 10, Secy.

American Hospital Association. Dr. Frank R. Bradley, St. Louis, Pres.; Dr. Edwin L. Crosby, 18 E. Division, Chicago, Executive Director.

American Laryngological, Rhinological, and Otological Society, Montreal, Canada, May 15-17, 1956. Dr. Dean M. Lierle, Iowa City, Pres.; Dr. C. S. Nash, 277 Alexander, Rochester 7, N. Y., Secy.

American Neurological Association, Atlantic City, N. J., June 18-20, 1956. Dr. J. M. Neilson, Los Angeles, Pres.; Dr. Charles Rupp, 133 S. 36th, Philadelphia 4, Secy.

American Ophthalmological Society, Hot Springs, Va., May 31-June 2, 1956. Dr. Alan C. Woods, Baltimore, Pres.; Dr. M. C. Wheeler, 30 W. 59th, New York 19, Secy.

American Orthopedic Association, Banff, Canada, June 20-23, 1956. Dr. Paul C. Colonna, Philadelphia 4, Pres.; Dr. George O. Eaton, 4 E. Madison, Baltimore 2, Secy.

American Pediatric Society, Buck Hill Falls, Pa., May 6-11, 1956. Dr. Allan M. Butler, Boston, Pres.; Dr. A. C. McGuinness, 237 Medical Laboratory, University of Pennsylvania, Philadelphia 46, Secy.

American Proctologic Society, Detroit, June 6-9, 1956. Dr. Stuart T. Ross, Hempstead, N. Y., Pres.; Dr. Karl Zimmerman, 3500 Fifth Ave., Pittsburgh 13, Secy.

American Psychiatric Association, Chicago, April 30-May 4, 1956. Dr. R. Finley Gayle, Richmond, Va., Pres.; Dr. William Malamud, 80 E. Concord, Boston 18, Secy.

American Public Health Association, Kansas City, Nov. 14-18, 1955. Dr. Herman E. Hilleboe, Albany, N. Y., Pres.; Dr. R. M. Atwater, 1790 Broadway, New York 19, Executive Secy.

American Society of Anesthesiologists, Boston, Oct. 29-Nov. 3, 1955. Dr. B. B. Sankey, Cleveland, Ohio, Pres.; Dr. J. E. Remlinger, Jr., 188 W. Randolph, Chicago, Secy.

American Society of Clinical Pathologists, Chicago, Oct. 10-15. Dr. John R. Schenken, Omaha, Pres.; Dr. Clyde G. Culbertson, 1040 W. Michigan, Indianapolis 6, Secy.

American Surgical Association, W. Sulphur Springs, W. Va., April 11-13, 1956. Dr. Alfred Blalock, Baltimore, Pres.; Dr. R. Kennedy Gilchrist, 59 East Madison, Chicago 3, Secy.

American Urological Association, Boston, May 28-31, 1956. Dr. George C. Prather, Brookline, Pres.; Dr. Samuel L. Raines, 188 S. Bellevue Blvd., Memphis, Tenn., Secy.

Association of American Physicians and Surgeons, Interim Meeting, Chicago, Oct. 7-8. Dr. James L. Doenges, Anderson, Ind., Pres.; Mr. Harry E. Northam, 185 N. Wabash Ave., Chicago 1, Executive Secy.

International College of Surgeons, U. S. Chapter, Philadelphia, Sept. 12-15, 1956. Dr. Arnold S. Jackson, Madison, Wisc., Pres.; Dr. Karl Meyer, 1516 Lake Shore Dr., Chicago, Secy.

National Tuberculosis Association, New York, May 21-25, 1956. Dr. Edward T. Fagan, Brooklyn, Pres.; Mrs. Morrell DeReign, 1790 Broadway, New York 19, Secy.

Radiological Society of North America, Chicago, Dec. 11-16, 1955. Dr. Tom B. Bond, Fort Worth, Pres.; Dr. D. S. Childs, 713 E. Genesee, Syracuse 2, N. Y., Secy.

Southern Medical Association, Houston, Texas, Nov. 14-17, 1955. Dr. Robert L. Sanders, Memphis, Tenn., Pres.; Mr. V. O. Foster, 1020 Empire Bldg., Birmingham 3, Secy.

Southern Psychiatric Association. Dr. John D. Trawick, Louisville, Pres.; Dr. Joseph L. Knapp, 210 N. Westmoreland, Dallas, Secy.

Southern Surgical Association, Hot Springs, Va., Dec. 6-8, 1955. Dr. Carrington Williams, Richmond, Pres.; Dr. George Finney, 2947 St. Paul, Baltimore, Secy.

Southwest Allergy Forum. Dr. Henry D. Ogden, New Orleans, Pres.; Dr. Stanley Cohen, 1441 Delachaise, New Orleans, Secy.

Southwest Regional Cancer Conference. Dr. John L. Wallace, Box 1719, Fort Worth, Chm.

Southwestern Medical Association, Phoenix, November 16-18, 1955. Dr. Joseph Bank, Phoenix, Pres.; Dr. Celso C. Stapp, 800 Montana, El Paso, Secy.

Southwestern Surgical Congress. Dr. Lawrence P. Engel, Kansas City, Pres.; Dr. C. M. O'Leary, 207 Plaza Court Bldg., Oklahoma City, Secy.

Tri-State Medical Society. Dr. William B. Harrell, Texarkana, Pres.; Dr. Karlton Kemp, 408 Hazel, Texarkana, Ark., Secy.

United States-Mexico Border Public Health Association. Mr. Richard F. Poston, San Francisco, Pres.; Dr. Sidney B. Clark, 314 U. S. Court House, El Paso, Secy.

STATE

Private Clinics and Hospitals Association of Texas, Austin, Dec. 10-11, 1955. Dr. Neil Buie, Marlin, Pres.; Mr. C. H. Rugeley, Wharton, Secy.

Texas Academy of General Practice. Dr. L. Bonham Jones, San Antonio, Pres.; Dr. Woodson W. Harris, 308 W. 15th, Austin, Secy.

Texas Academy of Internal Medicine, San Antonio, Dec. 10-11, 1955. Dr. W. W. Bondurant, Jr., San Antonio, Pres.; Dr. George M. Jones, 1314 Medical Arts Bldg., Dallas, Secy. Meetings restricted to members.

Texas Air-Medics Association, Galveston, April 22-23, 1956. Dr. W. A. Ostendorf, Fort Worth, Pres.; Dr. C. F. Miller, P. O. Box 1338, Waco, Secy.

Texas Association of Blood Banks, Houston, Dec. 8-10, 1955. Dr. Jarrett E. Williams, Abilene, Pres.; Miss Marjorie Saunders, 3500 Gaston Ave., Dallas, Secy.

Texas Association of Obstetricians and Gynecologists, Dallas, Feb. 18, 1956. Dr. John Delany, Galveston, Pres.; Dr. Oran V. Prejean, 4317 Oak Lawn, Dallas, Secy.

Texas Chapter, American College of Chest Physicians, Galveston, April 22, 1956. Dr. Samuel Topperman, Tyler, Pres.; Dr. J. O. Armstrong, 3810 Swiss Ave., Dallas, Secy.

Texas Club of Internists. Dr. Charles Barrier, Fort Worth, Pres.; Dr. Charles Darnall, Capital National Bank Bldg., Austin, Secy.

Texas Dermatological Society, Houston, Nov. 14-17, 1955. Dr. E. B. Ritchie, Galveston, Pres.; Dr. Thomas L. Shields, 1216 Pennsylvania Ave., Fort Worth, Secy.

Texas Diabetes Association, Galveston, April 22, 1956. Dr. Mavis P. Kelsey, Houston, Pres.; Dr. Hugo Engelhardt, P. O. Box 2180, Houston, Secy.

Texas Division, American Cancer Society. Mr. Travis Wallace, Dallas, Pres.; Mr. Curt W. Reimann, 1609 Colorado, Austin, Acting Executive Director.

Texas Geriatrics Society. Dr. Donald G. Kilgore, Dallas, Pres.; Dr. J. O. S. Holt, Jr., 3707 Gaston Ave., Dallas, Secy.

Texas Heart Association, Galveston, April 22, 1956. Dr. Kleberg Eckhardt, Corpus Christi, Pres.; Mr. Edgar M. Brown, 404 Jesse H. Jones Library Bldg., Texas Medical Center, Houston 25, Executive Director.

Texas Hospital Association, Dallas, April 3-5, 1956. Mr. Boone Powell, Dallas, Pres.; Mrs. Ruth Barnhart, 2210 Main, Dallas, Secy.

Texas Neuropsychiatric Association, Galveston, April 23, 1956. Dr. Stephen Weisz, Dallas, Pres.; Dr. Bruce H. Beard, 1519 Pennsylvania, Fort Worth, Secy.

Texas Orthopedic Association, Galveston, April 23, 1956. Dr. Paul Williams, Dallas, Pres.; Dr. Margaret Watkins, 3629 Fairmount, Dallas, Secy.

Texas Pediatric Society, Galveston, October 21-22, 1955. Dr. M. C. Carlisle, Waco, Pres.; Dr. James N. Walker, 3616 Tulsa Way, Fort Worth, Secy.

Texas Proctologic Society, Galveston, February, 1956. Dr. John McGivney, Galveston, Pres. and Secy.

Texas Public Health Association, Fort Worth, Feb. 26-29, 1956. Mr. Ed Riedel, Austin, Pres.; Mr. H. E. Drumwright, City Health Department, Dallas, Executive Secy.

Texas Radiological Society, Fort Worth, Jan. 20-21, 1956. Dr. Martin Schneider, Galveston, Pres.; Dr. R. P. O'Bannon, 650 Fifth Ave., Fort Worth, Secy.

Texas Railway and Traumatic Surgical Association, Galveston, April 23, 1956. Dr. A. O. Singleton, Jr., Galveston, Pres.; Dr. W. D. Marrs, 306 Broadway, Fort Worth, Secy.

Texas Rheumatism Association, San Antonio, Dec. 9, 1955. Dr. Charles H. Cornwell, Marlin, Pres.; Dr. Warren W. Moorman, 901 W. Leuda, Fort Worth, Secy.

Texas Society for Mental Health, San Antonio, March 1-3, 1956. Dr. Abe Hauser, Houston, Pres.; Mr. John Lane, 2510 San Antonio, Austin, Acting Executive Secy.

Texas Society of Anesthesiologists, Galveston, April 22, 1956. Dr. Joe B. Wood, Dallas, Pres.; Dr. Milton M. Rosenzweig, 200 Wildwood Dr. E., San Antonio, Secy.

Texas Society of Gastroenterologists and Proctologists, Galveston, April 23, 1956. Dr. W. T. Arnold, Houston, Pres.; Dr. O. P. Griffin, 1101 Medical Arts Bldg., Fort Worth, Secy.

Texas Society of Ophthalmology and Otolaryngology, Galveston, 1955. Dr. A. E. Jackson, Fort Worth, Pres.; Dr. Gatlin Mitchell, 1604 Medical Arts Bldg., Fort Worth, Secy.

Texas Society of Pathologists. Dr. C. B. Sanders, Houston, Pres.; Dr. M. H. Grossman, St. Paul Hospital, Dallas, Secy.

Texas Surgical Society, Houston, Oct. 3-4, 1955. Dr. Dudley Jackson, Sr., San Antonio, Pres.; Dr. Albert W. Hartman, 414 Navarro, San Antonio 5, Secy.

Texas Tuberculosis Association, Midland, April 6-7, 1956. Mrs. Joella Terrill Butler, Wichita Falls, Pres.; Miss Pansy Nichols, 2406 Manor Rd., Austin, Executive Secy.

Texas Urological Society, Austin, February 26, 1956. Dr. A. J. Ashmore, Corpus Christi, Pres.; Dr. Rex Carter, 1709 San Antonio, Austin, Secy.

DISTRICT

First District Society, Pecos, Feb. 16, 1956. Dr. Delphin von Briesen, El Paso, Pres.; Dr. W. G. Morrow, Jr., First National Bldg., El Paso, Secy.

Second District Society, Odessa, April 19, 1956. Dr. T. W. Novak, Odessa, Pres.; Dr. Willis T. Carson, 506 North Allegheny, Odessa, Secy.

Third District Society. Dr. M. C. Overton, Jr., Pampa, Pres.; Dr. William Klingensmith, 215 Fisk Bldg., Amarillo, Secy.

Fourth District Society, Brownwood, Oct. 20, 1955. Dr. James N. White, San Angelo, Pres.; Dr. Joe B. Stephens, Bangs, Secy.

Fifth and Sixth Districts Society, Corpus Christi, July 6-7, 1956. Dr. E. Jackson Giles, Corpus Christi, Pres.; Dr. Maurice Nast, 1126 3rd, Corpus Christi, Secy.

Seventh District Society. Dr. John R. Rainey, Jr., Austin, Pres.; Dr. Leslie C. Colwell, 1410 Brazos, Austin, Secy.

Eighth District Society. Dr. George E. Glover, Jr., Victoria, Pres.; Dr. York Lancaster, Port Lavaca, Secy.

Ninth District Society, Baytown, March 29, 1956. Dr. Joseph T. Dabney, Livingston, Pres.; Dr. Lyman C. Blair, 1212 Rothwell, Houston, Secy.

Tenth District Society, Nacogdoches, Fall, 1955. Dr. J. C. Klein, Lufkin, Pres.; Dr. Rider Stockdale, Jasper, Secy.

Eleventh District Society, Palestine, Oct. 20, 1955. Dr. Porter Bailes, Tyler, Pres.; Dr. Hugh F. Rives, Jacksonville, Secy.

Twelfth District Society, Bryan, January 10, 1956. Dr. Van D. Goodall, Clifton, Pres.; Dr. J. H. Johnson, 304 South 22nd, Temple, Secy.

Thirteenth District Society. Dr. P. M. Kuykendall, Ranger, Pres.; Dr. Robert D. Moreton, 815 Medical Arts Bldg., Fort Worth, Secy.

Fourteenth District Society. Dr. J. David Thomas, Denton, Pres.

Fifteenth District Society, Marshall, 1956. Dr. James Harris, Marshall, Pres.; Dr. L. E. Rutledge, Daingerfield, Secy.

CLINICS

Dallas Southern Clinical Society, Dallas, March 12-14, 1956. Dr. Alvin Baldwin, Jr., Dallas, Pres.; Miss Helga Boyd, Medical Arts Bldg., Dallas 1, Executive Secy.

International Medical Assembly of Southwest Texas, San Antonio, Jan. 23-25, 1956. Dr. John C. Parsons, 1125 Nix Professional Bldg., San Antonio, Secy.

New Orleans Graduate Medical Assembly, New Orleans, Feb. 27-March 1, 1956. Dr. Donovan C. Browne, New Orleans, Pres.; Dr. Maurice E. St. Martin, Room 103, 1430 Tulane Ave., New Orleans 12, Secy.

North Texas-Southern Oklahoma Fall Clinical Conference. Dr. E. C. Bebb, Broad, Wichita Falls, Chm.

Oklahoma City Clinical Society Conference, Oklahoma City, Oct. 24-27, 1955. Miss Alma F. O'Donnell, 512 Medical Arts Bldg., Oklahoma City 2, Executive Secy.

Postgraduate Medical Assembly of South Texas. Dr. C. Forrest Jorns, 5644 Lawndale, Houston, Secy.

State Tumor Conference, Wichita Falls, April 4, 1956. Dr. Bailey R. Collins, 925½ Scott, Wichita Falls, Director.

BOARD EXAMINATIONS

Texas State Board of Examiners in Basic Sciences. Mrs. Betty Ratcliff, 407 Perry-Brooks Bldg., Austin, Chief Clerk.

Texas State Board of Medical Examiners. Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth, Secy.

POSTGRADUATE COURSES OFFERED

Chest Diseases, October 3-7, Chicago, and November 14-18, New York. These annual postgraduate courses are presented by the Council on Postgraduate Medical Education of the American College of Chest Physicians in cooperation with the respective state chapters of the College. The courses endeavor to bring physicians up to date on recent advances in the diagnosis and treatment of heart and lung disease. Tuition is $75 per course, and further information may be secured by writing to the Executive Director, American College of Chest Physicians, 112 East Chestnut, Chicago 11.

Fractures and Joint Injuries, October 20-21, Denver. Sponsored by the University of Colorado School of Medicine, the course is primarily for general practitioners and will consist of lectures, panel discussions, and clinical demonstrations. For application and detailed program, interested physicians may write to the Director of Postgraduate Medical Education, University of Colorado Medical Center, 4200 East Ninth Avenue, Denver 20.

Cardiology, October 31-November 2, Mexico, D. F. Immediately following the meeting of the American Heart Association in New Orleans, there will be a post-congress tour to Mexico which will include three days of sight-seeing and three days of postgraduate scientific program at the National Institute of Cardiology. Persons interested in making the trip may write to Dr. Arthur S. Cain, American Heart Association, 44 East Twenty-Third, New York 10.

Orthopedic Surgery, October 31-November 1, Dallas. This course will be taught by members of the full-time and clinical faculty of the University of Texas Southwestern Medical School. It will include various aspects of fractures, low back disabilities, knee joint disabilities, foot disabilities, amputations, tendon injuries, and other related topics. Registration for the course is $5 and tuition $15. Full information and description of the course may be obtained by writing to the Division of Postgraduate Education, The University of Texas

Southwestern Medical School, 5323 Harry Hines Boulevard, Dallas 19.

The following courses will be held in Dallas with all-day programs, and there will be a number of courses scheduled one night a week for six to ten weeks in Dallas, and in other cities where there is sufficient demand. For further information, write to Dr. John S. Chapman, Assistant Dean for Postgraduate Education, 5323 Harry Hines Boulevard, Dallas 19. The courses include:

Surgery, December 6-8.
Cardiology, January 16-20.
Neurology and Psychiatry, April 2-4.
Pediatrics, May 14-16.
Pulmonary Diseases, May 28-29.

ASSISTANCE GRANTS OFFERED

A helping hand to physicians in need of financial assistance to establish medical practice units is being offered by the Sears-Roebuck Foundation in cooperation with the American Medical Association. Since young physicians often lack capital and business "know how," this plan is intended to fill the gap with long-term, low-cost assistance.

Unsecured 10-year loans of up to $25,000 will be available to physicians seeking to establish new practices but unable to arrange full local financing. The loans, intended especially for small or medium sized towns, growing suburbs, or rural communities, will be offered to physicians in at least one location in each of five regions covering the United States. Applications will be screened by a medical advisory board which has been appointed from nominations by the Association's Board of Trustees. Dr. F. J. L. Blasingame, Wharton, Past President of the Texas Medical Association, is chairman of the advisory board of the Foundation.

The terms of the note require payments of $12 per month per $1,000 borrowed, and the payments are due after three years and must continue until repayment is complete. Advance payments may be made if the recipient wishes. To encourage early repayment, the interest rate, 6 per cent per year, will be canceled when repayment begins.

Recipients also must pledge themselves to make a $240 tax-free contribution to the Sears-Roebuck Foundation for each $1,000 borrowed. Payments may be made at any time, but must begin after the fifth year at the rate of $2 per month per $1,000 for the fifth year; $3 a month for the sixth and seventh years; and $4 a month for the last three years. All money returned will be used to expand the program.

Applications must be sent to the office of the region in which the proposed medical practice is to be established. Physicians in the Southwestern region may write to the Director, Sears-Roebuck Board, 1409 South Lamar, Dallas 2. Dr. Robert D. Moreton, Fort Worth, is medical advisory chairman for this region.

CONFERENCES ON EDUCATION

Dr. Edwin L. Rippy, Dallas, is the chairman of the steering committee of the Texas Conference on Education, which will be held in Austin October 31-November 1. Dr. H. H. Brindley, Temple; Dr. Howard Smith, Marlin; and Mrs. Marius Hansen, Navasota, are members of their senatorial district executive committees on education which were to meet between September 6 and October 3 in preparation for the state conference.

Local, district, and state conferences are held to lead up to the annual White House Conference on education, and citizens of every community are given the opportunity to express their views on pertinent questions relating to public schools and education.

INDUSTRIAL HEALTH CONFERENCE

The eighth annual Industrial Health Conference of the Houston Chamber of Commerce was held September 22 and 23. After the opening ceremony, the first day of the meeting was devoted to topics relating to the agriculture industry and to the presentation of industrial health awards at the luncheon session.

The talks on agriculture consisted of the keynote address by M. T. Harrington, Ph. D., College Station; "Agriculture—Our Best Cold War Weapon," J. Norman Efferson, Ph. D., Baton Rouge; "The Farmer and His Chemicals," Dr. Lemuel C. McGee, Wilmington, Del.; "Diseases Transmissible to Man from Animals," W. W. Armistead, D.V.M., College Station; and "Accidents in Agricultural Operations," Dr. Herman Young, Rochester, Minn.

On the second day, the papers presented at the morning session centered around problems of rehabilitation, and included "Mobilizing Resources for Rehabilitation," Dr. Robert L. Bennett, Warm Springs, Ga.; "Financial Aspects of Rehabilitation," Stanwood L. Hanson, Boston; and "Legal Aspects of Employing Rehabilitates," E. B. Hoyler, Houston.

Two panel discussions were presented in the afternoon, and their topics were "Practical Applications of Current Research" and "Problems of Health in an Industrial Society."

Chairman and co-chairman of the morning session September 23 were Drs. Stanley W. Olson and Jack B. Mahoney, Houston. Dr. James E. Pittman, Houston, was chairman of the afternoon session, and his co-chairman was Dr. J. Layton Cochran, San Antonio, President of the Texas Medical Association.

International Board of Proctology

The American Regents of the International Board of Proctology have announced the activation of the board for the international certification of applicants who desire certification for the practice of proctology, either anorectal or anorectal and coloproctology, and of applicants who seek certification for proctology within general surgery.

The first class of candidates must limit their professional activities 100 per cent to the practice of proctology, and the second class may be general surgeons whose activities are partially limited to proctology.

The major functions of the International Board of Proctology will be as follows:

1. To certify those found to be qualified after meeting reasonable training requirements.

2. To stimulate research and study of the literature by requiring an original research monograph or literature research thesis.

3. To issue certificates of qualification to all approved candidates.

4. To help guide the education of physicians desiring to specialize in proctology.

5. To improve existing opportunities for the training of proctologists.

Information and applications may be requested from the offices of the American Regents, 147-41 Sanford Ave., Flushing, N. Y.

Infant Care Is TV Topic

"It's Baby Time," a television show on infant care, began the week of October 16 on local stations throughout the country. El Paso is the only Texas city at present which has scheduled the show, and tentative schedules have been made in other cities. The American Medical Association is cooperating in the production, and Dr. W. W. Bauer, director of the AMA's Bureau of Health Education, is the medical narrator.

PERSONALS

Dr. John G. Young, Dallas, presented a paper on "Teen-Age Problems" at the meeting in September of the Iowa Academy of General Practice.

Dr. Vernon J. Kinross-Wright, Houston, addressed members of the American Psychiatric Association at its recent Midwest Regional Research Conference in Galesburg, Ill.

Mrs. W. L. Crosthwait, wife of *Dr. W. L. Crosthwait,* Waco, died in a local hospital on August 17 after a heart attack. She was the mother of *Dr. R. W. Crosthwait,* also of Waco.

Dr. Paul C. Williams, associate professor of orthopedic surgery, Southwestern Medical School of the University of Texas, Dallas, addressed the Tulsa Academy of General Practice at its September meeting.

Dr. Abe Hauser, Houston, was a guest speaker at the September meeting of the Mid-Continent Psychiatric Association in Tulsa.

Dr. H. E. Griffin, Graham, was honored in September by the Graham chapter of Rotary International for his service to the Rotary Club and as an outstanding citizen of Graham.

Dr. and Mrs. Howard S. Aronson became the parents of a girl born on July 5 in Dallas.

SALK VACCINE

Although Salk vaccine now is coming from the laboratories in encouraging volume, in Washington there still are unresolved questions that may well go beyond the problem of controlling poliomyelitis, members of the American Medical Association's Washington staff point out. There was a sharp difference of opinion among legislators on the law which authorized the allocation of money to states to help finance inoculation campaigns. Some lawmakers wanted to give federal money for the exclusive use of children whose parents were officially determined unable to pay for the shots. Others wanted nothing to do with a bill carrying the "means test."

As finally enacted, the law provides enough money to buy vaccine for approximately one-third of all children under 20 and pregnant women. This is a concession to the "means test" faction, but another stipulation is that in inoculation programs arranged by the state and communities, no financial questions may be asked.

This may be the final decision as far as Congress is concerned, but some members want to reopen the entire question before the present law expires next February 15. If this is done, the following questions will again be put to the lawmakers:

1. Is it the responsibility of the federal government to make free shots available to all, regardless of ability to pay?
2. If there is to be a "means test," should the states or the federal government set the dividing line between the families that can pay and those who can't?
3. Should the federal government move into the picture and allocate the available vaccine, or should distribution continue along the present voluntary lines?
4. Should the states and communities arrange for all inoculations themselves?

Tri-State Medical Society

The Tri-State Medical Society met late in September in Texarkana. Guest speakers for the two-day session included Dr. Robert L. Sanders, Memphis, Tenn.; Dr. William R. Mathews, Shreveport; Robert L. King, Washington, D. C.; Dr. John C. Burch, Nashville; Dr. Joseph W. Kelso, Oklahoma City; and Dr. Richard V. Ebert, Little Rock.

Uniform Health Insurance Claim Forms

A two year cooperative effort by the insurance business and the medical profession to streamline health insurance claim forms used by doctors is nearing a successful conclusion, according to a recent progress report from the Health Insurance Council.

The council reports that its Special Committee on Uniform Claim Forms has submitted for acceptance by insurance companies the final drafts of two all purpose and two abbreviated physician statement forms. One of each type is for use with group insurance policies, and the other two are for individual and family policies. Short forms already have received approval from the American Medical Association's Council on Medical Service and have been accepted by companies writing the majority of the commercial health insurance business in America.

Around the end of this year, the council plans to have ready for distribution a pamphlet which will tell the story of the uniform claim forms project and also will serve as a working guide on the use of new uniform and streamlined claim forms.

NORTH TEXAS-SOUTHERN OKLAHOMA FALL CLINICAL CONFERENCE

Diagnosis and Treatment of Eruptions of Hands and Feet—Dr. Clarence S. Livingood, Detroit.
Prolonged Labor—Dr. John H. Randall, Iowa City.
Diagnosis and Treatment of Varicose Veins—Dr. I. Mims Gage, New Orleans.
Use of Cortisone, Hydrocortisone, and ACTH in Skin Eruptions—Dr. Livingood.
Headache—Dr. W. Grady Reddick, Dallas.
Office Gynecology—Dr. Randall.
Treatment of Benign and Malignant Pigmented Moles—Dr. Gage.

The above program was presented at the ninth annual North Texas-Southern Oklahoma Fall Clinical Conference held in Wichita Falls September 17. A cocktail hour preceded an informal dinner dance that evening.

SOUTHWEST LOUISIANA GRADUATE MEDICAL ASSEMBLY

The Southwest Louisiana Graduate Medical Assembly met recently in Lake Charles, La. With the exception of Dr. Martin, the guest speakers presented two papers each, as follows:

Indefinite Pelvic Mass: Problem and Solution; Differential Diagnosis of Vaginal Bleeding—Dr. W. F. Guerriero, Dallas.
Use and Abuse of Blood Transfusions; Rh Baby Can Be Saved—Dr. M. H. Grossman, Dallas.
Whiplash Injuries of Cervical Spine; Treatment of Common Injuries of Upper Extremities—Dr. B. F. Boylston, Houston.
Presacral Inclusion Cysts; Common Lesions Seen in Proctoscopic Examination—Dr. P. H. Hanley, New Orleans.
Treatment of Cancer of Skin—Dr. Charles L. Martin, Dallas.
Specific Correction of Surgical-Medical Electrolyte Imbalance; Present Concepts in Laboratory Diagnosis of Liver Disease—Dr. S. B. Nadler, New Orleans.

DRUG PRICES LAG

In the last fifteen years, drug prices have trailed far behind the spiraling cost of living, Eugene N. Beesley, president of Eli Lilly and Company, told leading pharmacy educators from the United States, Canada, and Puerto Rico, at an industrial seminar. He pointed out that government figures show a total consumer price index increase of 77.1 per cent from 1939 through 1954, while the drug and prescription price index increased only 32.9 per cent. He also said that in 1954, the American people were spending only 0.64 per cent of the disposable personal income for drugs and prescriptions as compared to 0.87 per cent in 1939.

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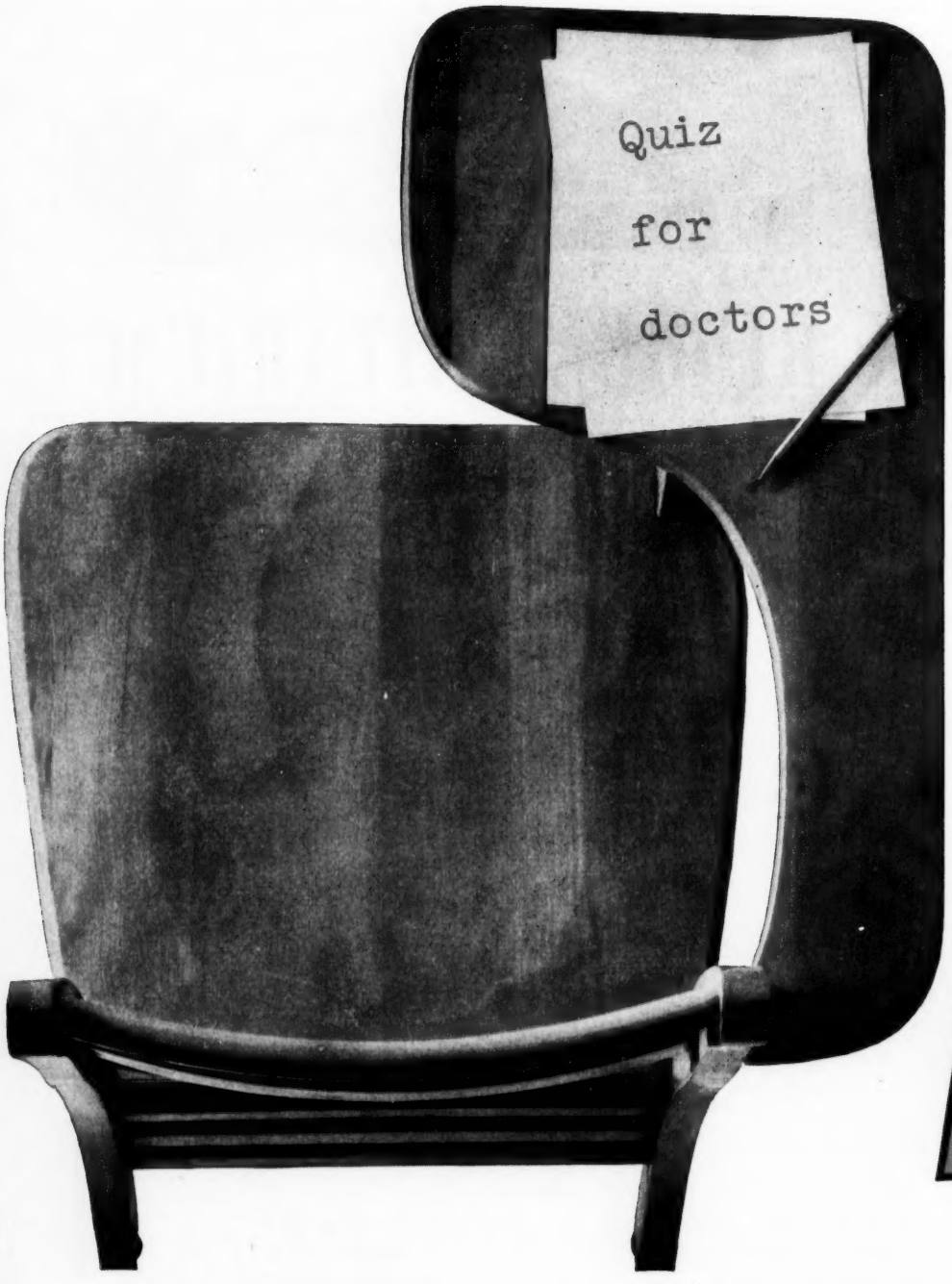

ACH

(you probably know every answer!)

Q. Which is today's most widely prescribed broad-spectrum antibiotic?

A. ACHROMYCIN — it's first by many thousands of prescriptions.

Q. What are some of the advantages of ACHROMYCIN?

A. Wide spectrum of effectiveness.
Rapid diffusion and penetration.
Negligible side effects

Q. Exactly how broad is the spectrum of ACHROMYCIN?

A. It has proved effective against a wide variety of infections, caused by Gram-positive and Gram-negative bacteria, rickettsia, and certain viruses and protozoa.

Q. In what way are ACHROMYCIN Capsules advantageous?

A. For rapid and complete absorption they are dry-filled, sealed capsules (a Lederle exclusive!) No oils, no paste...tamperproof.

Q. Who makes ACHROMYCIN?

A. It is produced — every gram — under rigid quality control in Lederle's own laboratories and is available only under the Lederle label.

CHROMYCIN*

Hydrochloride
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Complete modern facilities for Insulin-shock and Electro-shock therapy, under constant medical supervision. Psychotherapy. Occupational therapy. All other accepted methods of psychiatric treatment.

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Chas. L. Bloss, M. D. }

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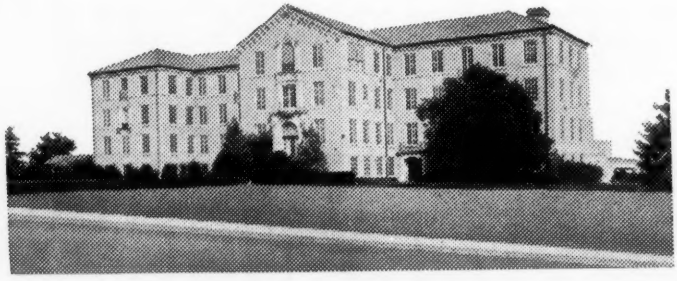
James K. Peden, M. D., Associate Psychiatrist
C. L. Jackson, M. D., Resident Psychiatrist

Mrs. Anne Gilcrease, R. N., Director of Nurses
Ralph M. Barnette, Jr., Business Manager
Miss Geraldine Skinner, Director Occupational Therapy



WICHITA FALLS CLINIC-HOSPITAL

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Wayne J. Holmes, Business Manager
Bertha McNeill, Administrator

Epilepsy and Electroencephalography

The Western Institute on Epilepsy and the Western Society of Electroencephalography will meet on November 10, 11, and 12 in Phoenix, Ariz., and will be cosponsored by the Arizona chapter of the American Academy of General Practice and the University of Utah School of Medicine. Dr. Wilder Penfield, director of the Montreal Neurological Institute, will be guest speaker. The program includes: seminar on epilepsy, November 10; clinical and research aspects of electroencephalography, November 11; and the social, educational, and employment aspects of epilepsy, November 12.

American Cancer Society, Oklahoma Division

The Oklahoma Division of the American Cancer Society will meet in Oklahoma City on December 2 for a full day of programs concerned entirely with malignancies. The program was designed for physicians of Oklahoma and adjoining states by the Professional Education Committee of the Oklahoma Division, American Cancer Society, with Dr. Joseph W. Kelso as chairman.

There will be a clinical pathologic conference at 8 a. m., and scientific papers will begin at 9 a. m. Guest speakers include Dr. Luke W. Able, Houston; Dr. Charles S. Cameron, New York; Dr. H. Close Hesseltine, Chicago; Dr. S. F. Marshall, Boston; and Dr. David A. Wood, San Francisco.

The meeting is open to all physicians and there is no registration fee. Everyone attending may also attend the annual dinner, at which Dr. Cameron, medical and scientific director of the American Cancer Society, will speak.

Advance registration is requested and may be achieved by addressing the Oklahoma Division, American Cancer Society, 937 Commerce Exchange Building, Oklahoma City 2.

Radioactive Isotopes Essay Contest

The annual Caleb Fiske Prize, given by the Rhode Island Medical Society, will be awarded this year to the writer of the best essay on "Use of Radioactive Isotopes in the Treatment and Investigation of Disease. The dissertations will be judged on the basis of original work by the author. First prize is $350. Rules and complete information are available from the Secretary, Caleb Fiske Fund, Rhode Island Medical Society, 106 Francis, Providence 3, R. I.

Portrait of Dr. E. H. Cary

A portrait of the late Dr. Edward H. Cary, eighty-fifth President of the American Medical Association, former President of the Texas Medical Association, and president and founder of the Southwestern Medical Foundation, was recently hung in the conference room of the new permanent headquarters of the foundation in the Medical Arts Building, Dallas. The portrait, painted by Dmitri Vail, was commissioned by the Dallas *Times Herald*.

LIBRARY SECTION

PROFESSIONAL FILMS AVAILABLE

Motion picture loans are part of the service offered through the Memorial Library of the Texas Medical Association. A list of films suitable for lay groups was presented in the September Journal, and a list of professional films is included in this issue.

In order that service may be better and more efficient, the staff asks that requests be sent well in advance of the time the film is needed, and that the date of the showing be given. Films must be returned promptly after showing. As new films are secured, they will be noted in the Library Section.

Accidents

The Injured Can't Wait, sound, 16 min., 1953.
Injuries, Athletic, color, sound, 45 min., 1950.

Anesthesiology

Analgesia, Continuous Caudal, sound, 20 min., 1944.
Anesthesia, Regional, silent, color, 50 min., 1940.
Intravenous Anesthesia with Barbiturates, sound, color, 16 mm., 1954.
Low Spinal Anesthesia in Obstetrics, 20 min., color, 1948.

Anomalies and Abnormalities

Cardiovascular Anomalies, sound, 35 min., 1949.

Anoxia

Anoxia, Physiology of, sound, color, 30 min., 1947.

Aorta

Coarctation of Aorta, color, silent, 30 min., 1949.

Appendicitis

Appendicitis in Childhood, sound, 49 min., 1941.

Arthritis

Rheumatoid Arthritis, sound, color, 31 min., 1950.

Blood Banks

The Injured Can't Wait, sound, 16 min., 1953.

Cancer

Breast Cancer, Early Diagnosis, sound, color, 35 min., 1949.
Breast Self Examination, sound, color, 18 min., 1950.
Cancer Detection, sound, color, 38 min., 1955.
Cancer, Early Diagnosis sound, color, 30 min., 1949.
Cancer of the Oral Cavity, sound, color, 35 min., 1955.
Cancer of the Urinary Bladder, sound, color, 48 min., 1955.
Cervical Smear, silent, color, 20 min., 1949.
Cervical Smear, II, silent, color, 25 min., 1948.
Esophagogastrostomy silent, color, 40 min., 1948.
Esophagus, Surgical Treatment—Carcinoma, color, 42 min., 1947.
Gastro-Intestinal Cancer, sound, color, 33 min., 1950.
Hemicolectomy for Carcinoma of the Right Side of the Colon, silent, color, 22 min., 1950.
Lymphomas and Leukemias, sound, color, 55 min., 1955.
Psychological Aspects of Cancer, color, 39 min., 1955.
Splenic Flexure Carcinoma, Surgical Treatment for, silent color, 40 min., 1947.
Oral Cancer, sound, color, 28 min., 1953.
Uterine Cancer, sound, color, 20 min., 1952.
What Is Cancer? sound, color, 30 min., 1949.

Colon

Hemicolectomy for Carcinoma of the Right Side of the Colon, color, silent, 22 min., 1950.
Megacolon; Total Colectomy with Ileoproctostomy for Hirschsprung's Disease, color, 30 min., 1948.

Drugs

Enzyme Therapy with Varidase, sound, color, 20 min., 1953.

Esophagus

Esophagus, Surgical Treatment for Carcinoma of the Lower End of, color, 42 min., 1947.
Esophagogastrostomy, silent, color, 40 min., 1948.

Transthoracic Esophageal Diverticulectomy, color, 23 min., 1948.

First Aid
Artificial Respiration, Backpressure–Arm Lift Method, sound, 21 min., 1954.

Gallbladder
Technique for Cholecystectomy and Common Duct Exploration, sound, color, 32 min., 1955.

Gastrointestinal Tract
Gastric Vagotomy and Gastroenterostomy in the Treatment of Duodenal Ulcer, sound, 1955.
Gastro-Intestinal Cancer, sound, color, 33 min., 1950.
Gastroscopy; Gastric Pathology, sound, 30 min., 1947.
Pyloric Stenosis, color, 15 min., 1949.
Splenic Flexure Carcinoma, color, 40 min., 1947.

Gynecology
Breast Plastic — One Stage Operation for Pendulous Breasts, color, 30 min., 1950.
Lesions of Vulva, Vagina, Cervix, color, 10 min., 1948.
Trichomonas Vaginalis and Leukorrhea, 20 min., 1943.

Hand
Functional Anatomy of the Hand, sound, color, 26 min., 1951.

Heart Disease
Cardiovascular Anomalies, sound, 35 min., 1949.
Heart, Cardiovascular Pressure Pulses and Electrocardiography, sound, color, 34 min., 1950.
Heart Disease, Oxygen Therapy, sound, 30 min., 1946.
Heart: Electrokymography, sound, color, 34 min., 1951.

Hemorrhoidectomy
Hemorrhoidectomies Using Powers Clamp, 14 min., 1953.

Hernia
Strangulated Femoral Hernia, sound, color, 20 min., 1954.

Hypertension
Portacaval Shunt for Portal Hypertension, color, 18 min., 1949.

Hypodermic Syringes
Hypodermic Syringes and Needles: Care and Function, sound, color, 62 min., 1950.

Intestines
Pyloric Stenosis: Surgery, color, 15 min., 1949.

Liver Diseases
Hepatitis; Observations, sound, 35 min., 1948.

Mouth
Oral Cancer, sound, color, 28 min., 1953.

Obstetrics
Anesthesia, Low Spinal in Obstetrics, sound, color, 20 min., 1948.
Delivery of Triplets, sound, color, 26 min., 1952.
Extraperitoneal Cesarean Section, sound, color, 23 min., 1952.
Obstetric Roentgenography, sound, 21 min., 1950.

Ophthalmology
Glaucoma, sound, color, 22 min., 1952.

Orthopedics
Functional Anatomy of the Hand, sound, color, 26 min., 1951.
Sciatic Pain and the Intervertebral Disk, sound, color, 33 min., 1954.

Otolaryngology
Bronchoscopic Clinic, color, 30 min., 1954.

Oxygen Therapy
Oxygen Therapy in Heart Disease, sound, 30 min., 1946.
Oxygen Therapy, sound, 35 min., 1944.

Pain
Sciatic Pain and the Intervertebral Disk, sound, color, 33 min., 1954.

Parkinsonism
Parkinsonism, 11 min., 1947.

Pediatrics
Appendicitis in Childhood, sound, 49 min., 1941.
Dwarfism, sound, 45 min., 1950.

Physiology
Extracellular Fluid, sound, 25 min., 1945.
Gastroscopy, sound, 30 min., 1947.

Poliomyelitis
Diagnosis of Poliomyelitis, sound, 20 min., 1951.
Post-Poliomyelitis Operative Procedures, sound, color, 50 min., 1948.

Public Relations
Here's Health the American Way, sound, 38 min., 1950.
Life to Save, sound, color, 27 min., 1954.
Operation Herbert, sound, 33 min., 1953.

Rickets
Rickets and Scurvy, sound, 23 min., 1948.

Roentgenology
Obstetric Roentgenography, sound, 21 min., 1950.
X-Ray, Chest, sound, 20 min., 1946.
X-Ray, Chest, Technique Group Service, sound, 20 min., 1946.

Scabies
Scabies, sound, 26 min., 1947.

Scurvy
Ascorbic Acid and Scurvy, sound, 25 min., 1948.
Rickets and Scurvy, sound, 23 min., 1948.

Shock Treatment
Rapid Treatment of Acute Mania with Combined Coramine-Electroshock Technique, sound, color, 33 min., 1950.

Surgery
Breast Plastic — One Stage Operation for Pendulous Breasts, silent, color, 30 min., 1950.
Cholecystectomy and Common Duct Exploration, sound, color, 32 min., 1955.
Coarctation of Aorta, silent, color, 30 min., 1949.
Esophagus, Surgical Treatment for Carcinoma of the Lower End of, color, silent, 42 min., 1947.
Gastro-Intestinal Cancer, sound, color, 33 min., 1950.
Megacolon, Total Colectomy with Ileoproctostomy for Hirschsprung's Disease, color, 30 min., 1948.
Hemicolectomy for Carcinoma of the Right Side of the Colon, color, silent, 22 min., 1950.
Post-Poliomyelitis Operative Procedures, sound, color, 50 min., 1948.
Pyloric Stenosis Surgery, color, 15 min., 1949.
Splenic Flexure Surgery, Cancer, silent, color, 40 min., 1947.
Strangulated Femoral Hernia, sound, color, 20 min., 1954.
Transthoracic Esophageal Diverticulectomy, color, 23 min., 1948.
Vagotomy and Gastroenterostomy in the Treatment of Duodenal Ulcer, sound, 1955.
Vagotomy for Ulcerative Colitis, sound, color, 15 min., 1948.

Tuberculosis
You Can Help, sound, 10 min., 1948.

Ulcers
Gastric Vagotomy and Gastroenterostomy in the Treatment of Duodenal Ulcer, sound, 1955.

Uterus
Uterine Cancer, sound, color, 20 min., 1952.

Varicose Veins
Varicose Veins, Complications, sound, color, 30 min., 1945.
Varicose Veins, Treatment, silent, color, 20 min., 1947.

BOOKS RECEIVED IN AUGUST

Allen, A. C.: *The Skin; A Clinicopathologic Treatise,* St. Louis, C. V. Mosby, 1954.

Atkinson, W. S.: *Anesthesia in Ophthalmology,* Springfield, Ill., Charles C Thomas, 1955.

Barborka, C. J., and Texter, E. C., Jr.: *Peptic Ulcer, Diagnosis and Treatment,* Boston, Little, Brown & Company, 1955.

Dalldorf, Gilbert: *Introduction to Virology,* Springfield, Ill., Charles C Thomas, 1955.

Fleming, A. J., and D'Alonzo, C. A., Eds.: *Modern Occupational Medicine,* Philadelphia, Lea & Febiger, 1954.

Hartwell, S. W.: *Mechanisms of Healing in Human Wounds,* Springfield, Ill., Charles C Thomas, 1955.

Hryntschak, Theodor: *Suprapubic Prostatectomy,* Springfield, Ill., Charles C Thomas, 1955.

Jolly, Hugh: *Sexual Precocity,* Springfield, Ill., Charles C Thomas, 1955.

Jones, Laurence: *The Postural Complex,* Springfield, Ill., Charles C Thomas, 1955.

Lowrie, R. J.: *Gynecology, Surgical Techniques,* vol. 2, Springfield, Ill., Charles C Thomas, 1955.

Luck, J. V.: *Bone and Joint Diseases,* Springfield, Ill., Charles C Thomas, 1950.

Milbank Memorial Fund: *The Biology of Mental Health and Disease; Report of the Twenty-Seventh Annual Conference of the Milbank Memorial Fund,* New York, Paul B. Hoeber, 1952.

Moore, Merrill: *A Doctor's Book of Hours,* Springfield, Ill., Charles C Thomas, 1955.

Parmley, R. T.: *Saddle Block Anesthesia,* Springfield, Ill., Charles C Thomas, 1955.

Reed, S. C.: *Counseling in Medical Genetics,* Philadelphia, W. B. Saunders, 1955.

Ross, D. E.: *Salivary Gland Tumors,* Springfield, Ill., Charles C Thomas, 1955.

Wiener, Kurt: *Systemic Associations and Treatment of Skin Diseases,* St. Louis, C. V. Mosby, 1955.

Welsh, A. L.: *Leukoplakia, Leukokeratosis and Cancer of the Mouth,* Springfield, Ill., Charles C Thomas, 1955.

CONTRIBUTIONS TO THE LIBRARY

Grateful acknowledgment is made by the Texas Medical Association Memorial Library for the following recent gifts:

Dr. T. J. Archer, Austin, 121 journals.
Dr. E. P. Reed, Dumas, 6 books.
Dr. R. R. Ross, Austin, 629 journals.
Dr. N. L. Schiller, Austin, 22 journals, 24 reprints.
Dr. Oliver W. Suehs, Austin, 38 journals.
Dr. B. O. White, Austin, 22 journals.
Dr. David Womack, Austin, 23 journals.

BOOK NOTICES

Seventy-Five Years of Medical Progress, 1878-1953

Edited and with a Foreword by LOUIS H. BAUER, M. D., F.A.C.P., *Secretary-General, World Medical Association; Past President, American Medical Association. 286 pages. $4. Philadelphia, Lea and Febiger, 1954.*

The book is a compilation of the papers presented before the First Western Hemisphere Conference of the World Medical Association which was held in Richmond, Va., in 1953. The theme of the conference was the commemoration of 75 years of medical progress. Men of distinguished attainments in each of 19 medical specialties, as well as a representative of general practice, were invited to contribute papers on the history and present status of their particular fields in medicine. In the past 75 years "medical scientists have learned more about the nature and treatment of disease and about its prevention, than in the previous three thousand years," the editor says. The book gives a complete picture of contemporary medicine and the victories in the war against disease.

[1]On Burns

Compiled and Edited by NATHAN A. WOMACK, M. D. *178 pages. $5.50. Springfield, Ill., Charles C Thomas, 1953.*

This book is very worth while in this atomic age.

The comparison of the treatment of burns at the State University of Iowa Hospital during the period 1930 to 1940 and the period 1940 to 1950 is interesting. The great expense and the great problems of supplying blood and other materials in times of a catastrophe in a populous area is serious, and all medical men should be prepared for this possibility.

Chapter 2 on relief of the pain in burns is good. Chapter 3 on the open treatment of burns, as discussed by Dr. Truman Blocker, Galveston, points the way to a better treatment of the acute stage of burns.

In chapter 4, Dr. James Brown discusses early care and grafting of acute burns. Chapters 5 and 6 deal with the problems of infection and enzyme debridement of burn eschar. In chapters 7 and 8 the treatment of burn shock is discussed by Dr. N. J. H. Butterfield and Dr. Carl Moyer.

This is an excellent short book on burns.

[2]Pharmacology and Therapeutics

ARTHUR GROLLMAN, Ph. D., M. D., F.A.C.P., *Lecturer in Pharmacology and Toxicology, University of Texas Medical Branch; Professor and Chairman of the Department of Experimental Medicine, Southwestern Medical School of the University of Texas. ed. 2, revised and enlarged. 127 illustrations. 866 pages. $10. Philadelphia, Lea and Febiger, 1954.*

This textbook deals with the history of pharmacology and its relation to the other medical sciences. Various drugs are grouped and studied according to their chemical constitution and pharmacologic actions. The practical application of this information is made easy by the author's grouping of drugs which act primarily on a single body system. For example, under the cardiovascular system are discussed the digitalis series, the nitrites and nitrates, quinidine, procaine amide, and the numerous drugs used to combat hypertensive cardiovascular disease.

At the end of each chapter are lists of the United States and British Pharmacopeia preparations and dosages of the drugs mentioned in that chapter. In addition to the official preparations, many of the more commonly used proprietary drugs are discussed as to their chemical structure and pharmacologic action. No textbook can keep pace with the pharmaceutical companies' flood of new products; however, the reader will find that this text lists and elaborates on most of the new products.

The clinician may not always agree with the author's evaluation of some of the newer drugs, but this is understandable when one considers that opinion is not, as yet, completely unified in relation to some drugs which have been known and used for centuries.

The sulfonamides and related compounds are fully elaborated as to chemistry, pharmacology, and toxicology. The

[1]*P. R. Fayle, M. D., Baytown.*
[2]*R. M. Bellamy, M. D., Pampa.*

same consideration is given to penicillin, streptomycin, Aureomycin, Terramycin, Erythromycin, and other antibiotics. A chapter is devoted to the hormones and drugs acting on the endocrine glands. This includes the sex hormones, thyroid and pituitary preparations, desoxycorticosterone, cortisone, and ACTH. The various insulin products are tabulated and compared as to time of onset of their action and duration.

It is the impression of this reviewer that the text is perhaps overloaded with structural chemical formulas. The structural formula is given for most of the drugs discussed, and entire pages are filled with formulas which are of little interest to the average clinician. Appendix A is devoted to the defunct art of prescription writing, and Appendix B classifies drugs according to their therapeutic uses and refers to the page in the text where the drug is discussed.

The book is well written and covers the field. Both student and practitioner will find it a worthy addition to his medical library.

[3]History and Conquest of Common Diseases

Edited by WALTER R. BETT, M.R.C.S., L.R.C.P., F.R.S.L., F.S.A., *Scot. 334 pages. $4. Norman, University of Oklahoma Press, 1954.*

In reading the "History and Conquest of Common Diseases," one is most impressed by the gradual and progressive increase in the quality and improvement in the conduct of the medical profession. It is notable that the epoch-making paper by Dr. Edward Jenner in 1798 under the modest title "An inquiry into the causes and effects of the variolae vaccinae, a disease discovered in some of the western counties of England, particularly Gloucestershire, and known by the name of Cow Pox" was refused publication by the Royal Society.

At times progress appears to be painfully slow, although progressive, as for example in the handling of appendicitis. Claudius Amyand, surgeon in St. George's Hospital, London, in 1736, published the first record of a successful appendectomy. The operative story of appendicitis is intimately and impressively linked with the Listerian revolution in surgery and aggressive surgery of the appendix is a posthumous child of this revolution.

It was in 1880 that Charles McBurney delivered before the New York Surgical Society his classical paper on "Early operative interference in cases of disease of the vermiform appendix," while the later development of importance is the liberal use of antibiotics in all cases in which inflammation has extended to the peritoneum.

The low position of the medical profession during medieval times and even up to the time of Frederick the Great makes one stop and consider how fortunate we are in our present age in that with time, organization and self discipline within the profession have had a salient effect in making the physician a more respected person in his community.

It was the advent of Christianity which produced a change in attitude from the harsh treatment of the sick and the poor.

In Napoleon's time it became a not unusual thing for prospective soldiers to turn up with amputation of the great toe with loss of the plantar arch, thus making military duties difficult if not impossible. Even after World War I a man was caught furnishing positive sputum samples for any and all comers so that they could get their hands into her majesty's treasury. He was finally apprehended thereby losing his two guineas per throw and easing the headaches of her majesty's ministry of pensions.

[3]*Joe C. Rude, M. D., Austin.*

For those who do not wish their illusions shattered about their honorable and noble calling this book is not recommended. It will help to broaden one's understanding of the lowly and somewhat disrespectful state in which the general profession was held at one time and then to realize through what painful processes the medical profession has risen to its present highly ethical and respected position. The healthy signs at the present of recognition of the profession's role and responsibility to the public are signs of a healthy future, for, as the old saying goes, "Eternal vigilance is the price of liberty."

[4]De Abditis Morborum Causis (The Hidden Causes of Disease)

ANTONIO BENIVIENI, *Florence. Translation by* CHARLES SINGER. *217 pages. $6.75. Springfield, Ill., Charles C Thomas, 1954.*

This is a collection of case records of a Florentine physician (1443-1502) and is the first English translation. The volume was edited soon after his death by a fellow physician, Giovanni Rosati. These case reports are notable in that occasional references to autopsy findings are included. This has caused the author to be referred to as one of the founders of pathologic anatomy although it is doubtful that he personally performed many of the necropsies. Many of the reports seem to indicate that he was present only as an observer. It is of interest to note that his rather casual mention of the procedure of necropsy indicates that it was not an uncommon practice in those days. Apparently permission was obtained from the next of kin in much the same way as today.

Many of the case reports are purely clinical, however, and should be of interest to all physicians although the accounts are extremely brief, especially in regard to treatment. One finds the author's frequently critical remarks about fellow physicians interesting. He still adheres to the humoral theory of disease and attempts to explain most diseases on this basis.

Both the original Latin and English translations of the account are given, along with a useful appendix of notes on some of the words used.

Textbook of Bacteriology

JOSEPH M. DOUGHERTY, Ph. D., *formerly Dean of the School of Science and Professor of Bacteriology, Villanova University; and* ANTHONY J. LAMBERTI, M. S., *Instructor in Bacteriology and Parasitology, Temple University School of Medicine; formerly Instructor in Bacteriology, Villanova University. ed. 3. 598 pages. $8.25. St. Louis, C. V. Mosby Company, 1954.*

The third edition of this text has been completely revised with the aim of securing the interest of a large number of the students required to study bacteriology. The authors are teachers of premedical and predental students as well as those preparing to teach bacteriology.

The book was not prepared as a reference book. Footnotes have been removed and historically significant literature and symposiums pertaining to the subject have been placed at the end of each chapter. Since the undergraduate is not concerned with therapy, the authors have eliminated chemotherapy in their discussions.

To bring subjects up to date, new chapters have been added, and the original chapter on colon-typhoid-dysentery group has been completely rewritten into four new chapters. The chapters on classification, morphology, chemistry, and metabolism of bacteria and the chapters on immunology and the viruses have been rewritten. The book has not been aimed at the medical profession.

[4]*C. E. Gordon, M. D., Fort Worth.*

[5]**Cultural Difference and Medical Care**

LYLE SAUNDERS, *Associate Professor of Preventive Medicine and Public Health (Sociology), University of Colorado, School of Medicine. 317 pages. $4.50. New York, Russell Sage Foundation, 1954.*

In this book the author presents a plea, a rationale, and a plan for the use of sociological methods to improve the utilization of present day medical care procedures by the people of Spanish and Mexican descent who live in the southwestern part of the United States. Much of the problem is that of any minority group, and the author gives the usual sociological processes in dealing with it, such as those having to do with economics, education, and segregation. He also points out some special processes peculiar to this group such as those dealing with language, attitude toward time schedules, and lack of leadership.

The chapter on "Healing Ways" discusses the type of folk medicine used by a small and diminishing portion of the group. Though the general problem is not one peculiar to the people of Mexican and Spanish descent, some of its finer details are.

In many parts of the book the reader would like more statistics to get a quantitative idea of the seriousness of the sociological problems. The impression gained from the book is gloomier than it need be.

Further, there is also some emphasis on the negative in presenting the various problems, and when a solution is suggested, it is seldom supported with a positive experience. The presentation of a medical care program of the Farm Security Administration is an example. This type of program is foreign to the culture of both the persons of Spanish and Mexican descent as well as those of other European descent and has not been particularly successful in either group. Experience with a tuberculosis program or an immunization program probably would have been a more pertinent one to the average reader.

Physicians, nurses, and other medical workers who are not part of the group of Spanish and Mexican descent and who find they must work with them will find that this book presents them with much useful material.

[5]*Fred C. Kluth, M. D., Corpus Christi.*

ORGANIZATION SECTION

TEXAS MEDICAL ASSOCIATION

GROUP INSURANCE POLICY AVAILABLE

The Texas Medical Association is adding a new service for its members. The first true group disability program sponsored by the Texas Medical Association for the protection of its members now is being made available to all members up to the age of 70 years, regardless of whether or not they are considered good insurable risks. The plan offers lifetime benefits for accidents and ten-year benefits for sickness, which compares with only five-year benefits for accidents and two or three-year benefits for sickness in almost all other medical plans; the Association is the first state medical group to secure these benefits. This flexible program provides each participating physician with a choice of three plans from which to select the coverage best suited to meet his needs: immediate coverage, 30-day waiting period, or six-month waiting period. Each plan includes a $5,000 accidental death benefit and pays from $50 to $150 weekly during a period of disability resulting from an accidental bodily injury or sickness.

It is unnecessary to point out that certain advantages are gained through a group insurance plan which cannot be had under ordinary policies, and the Charles O. Finley Company, administrator of the Association's program, offers this comment: ". . . the idea is to make available to the *entire membership* regardless of present physical condition or past medical history a group disability insurance program which provides comprehensive coverage at the lowest possible premium."

The contract, underwritten by the Lumbermen's Mutual Casualty Company with assets of more than $200,000,000, was obtained after careful consideration of ten proposals presented by reputable insurance companies. The proposals were considered by the Council on Medical Economics and the Board of Trustees. The Finley Company is the largest administrator of professional group insurance programs in the United States, including plans for many other medical organizations.

Some of the outstanding advantages of the program in addition to those previously mentioned are full accident and sickness benefits regardless of other insurance, coverage around the clock including sports and recreation as well as professional duties, provision that a policy for any doctor under the age of 70 years cannot be cancelled nor his renewal refused as long as he is actively engaged in his profession and the plan remains in force, house confinement never required for full benefits, no increase in premium or decrease of benefits with age, and no territorial restrictions.

A master policy is being issued to the Texas Medical Association, and each member insured under the plan will receive a certificate of insurance. The program will be supervised by the Board of Trustees for the protection of participants.

It is important to note that in sponsorship of this plan the Association has withdrawn its endorsement of the Metropolitan Casualty Insurance Company policy written through the Sid Murray Agency.

Further details regarding the new insurance plan may be obtained from the Association's Executive Secretary, 1801 North Lamar Blvd., Austin.

ANNUAL SESSION SPEAKERS

Outstanding medical authorities from throughout the nation will be guest speakers for the annual session of the Texas Medical Association from April 21 to 25, 1956, in Galveston.

Following is a list of the guest speakers already obtained who will present papers at general meetings and to section and specialty groups. Some also will conduct refresher courses, which will be announced later.

Dr. Daniel C. Baker, Jr., otolaryngology, Columbia University, New York.

Dr. Elmer Bartels, internal medicine, Lahey Clinic, Boston.

Dr. Joseph H. Boyes, surgery of the hand, University of Southern California, Los Angeles.

Dr. Douglas N. Buchanan, neurology and pediatrics, University of Chicago.

Dr. Edward P. Cawley, dermatology, University of Virginia School of Medicine, Charlottesville.

Dr. Paul Chandler, ophthalmology, Harvard Medical School, Boston.

Dr. John Derham, pediatrics, Alder Hey Children's Hospital, Liverpool, England.

Dr. Rex L. Diveley, orthopedics, Kansas City.

Dr. Spurgeon English, neuropsychiatry, Philadelphia.

Dr. Paul C. Hodges, radiology, University of Chicago.

Dr. Sara M. Jordan, gastroenterology, Lahey Clinic, Boston.

Dr. F. Raymond Keating, diabetes, Mayo Clinic, Rochester, Minn.

Dr. Samuel F. Marshall, surgery, Lahey Clinic, Boston.

Dr. Emma S. Moss, pathology, Charity Hospital of Louisiana, New Orleans.

Dr. Dwight H. Murray, President-Elect, American Medical Association, Napa, Calif.

Dr. Harry S. Mustard, public health, Columbia University, New York.

Dr. George T. Pack, cancer surgery, Memorial Hospital, New York.

Dr. Ralph A. Reis, Editor, *Journal of the American Academy of Obstetrics and Gynecology,* Chicago.

Dr. Maurice S. Segal, chest diseases, Tufts University School of Medicine, Boston.

Dr. Perry P. Volpitto, anesthesiology, Medical College of Georgia, Augusta.

Dr. Waltman Walters, traumatic surgery, Mayo Clinic, Rochester, Minn.

Several other guests are being invited and will be announced in the JOURNAL as soon as acceptances are received.

While presentations by guest speakers are being worked out, papers by Texas physicians are being lined up to complete the section and specialty programs. Those interested in offering material for this purpose should write the appropriate officer without delay.

AMERICAN MEDICAL ASSOCIATION

Boston Clinical Meeting

The clinical meeting of the American Medical Association to be held in Boston, November 29 to December 2, marks the ninth assembly of this winter feature. An outstanding scientific program covering all phases of medicine will include lectures and round-table discussions held in three lecture halls simultaneously, color television, and motion pictures. Leading authorities from all over the country will be on hand in the Scientific Exhibit to answer questions and discuss problems with doctors. The Technical Exhibition will feature the latest developments in equipment, books, and pharmaceuticals. The Mechanics Building will house both types of exhibits. The House of Delegates will meet in the Statler Hotel.

Hotel accommodations may be reserved through the Chairman, AMA Housing Committee, 80 Federal Street, Boston 10.

Members of the AMA have been invited to meet with the Bahamas Medical Association in Nassau on Wednesday, December 7, following the clinical meeting in Boston. Arrangements have been made for an official tour to Nassau for the week of December 3 through 10 so that members may accept the invitation. Tour folders are available from the AMA Nassau Tour Headquarters, 35 East Monroe, Chicago 3.

Just prior to the clinical meeting, on November 28, the Eighth National Medical Public Relations Conference will be held at the Statler Hotel in Boston. This conference is held primarily for physicians responsible for establishment of public relations policies within their state and county societies.

COUNTY SOCIETIES

Austin-Waller Counties Society

July 5, 1955

M. Graham Bolton, Hempstead, has been elected president of the Austin-Waller Counties Medical Society. Other officers who will serve with him are James B. Harle, Bellville, vice-president; Winston B. Neely, Bellville, secretary-treasurer; and H. E. Roensch, and J. A. Neely, Bellville, and S. C. Walker, Hempstead, delegates. The meeting was held on July 5 in Hempstead.

Big Bend Counties Society

July 5, 1955

(Reported by D. J. Sibley, Jr., Secretary)

Head and Neck Injuries—Paul Rader, Odessa.

Meeting on July 5 in Fort Stockton, members of the Big Bend Counties Medical Society heard the above scientific paper. In the business meeting, it was decided that a specimen constitution for county societies be requested from the Texas Medical Association in order that the Big Bend Counties Society might revise its constitution properly.

Tarrant County Society

July 5, 1955

(Reported by S. W. Wilson, Secretary)

Afibrioginemia in Obstetrics and Gynecology—Noel R. Bailey, C. D. Fitzwilliam, James G. Stouffer, and R. J. Rimmer, Fort Worth.

At the July 5 meeting of the Tarrant County Medical Society in Fort Worth, a code of cooperation was adopted to insure good relations between press, radio, and television, the Tarrant County Medical Society, and Tarrant County hospitals.

Three physicians were elected to membership.

Tierra Blanca Society

July 19, 1955

(Reported by B. A. Masters, Secretary)

Radiographic Diagnosis of Herniated Nucleus Pulposus—Millard Nobles, Hereford.

Surgical Correction of Herniated Disk and Nucleus Pulposus—Arthur T. Mims, Hereford.

The Tierra Blanca County Medical Society met on July 19 in Canyon and heard the above scientific papers, which emphasized new techniques. In connection with the program, a sound film demonstrating the technique of radiographic diagnosis and surgical correction of herniated nucleus pulposus was shown.

DISTRICT SOCIETIES

Fifth and Sixth Districts Society

July 8, 9, 1955

(Reported by E. Jackson Giles, Secretary)

The Fifth and Sixth Districts Medical Society met in Corpus Christi July 8 and 9. New officers elected at this meeting are E. Jackson Giles, president; James C. Sharp, vice-president; and Maurice D. Nast, secretary-treasurer. All are from Corpus Christi.

A full scientific program was scheduled, and guest speakers included Ambrose H. Storck, New Orleans; Harold O. Peterson, St. Paul, Minn.; Bruce Logue, Atlanta, Ga.; Francisco Rocha, Monterrey, Mexico; and K. E. Corrigan, Ph. D., Detroit.

A golf tournament at the country club, followed by a buffet supper for the doctors and their wives, concluded the activities. The next meeting will be held in Corpus Christi on July 6 and 7, 1956.

AUXILIARY SECTION

YOUR JOB FOR MENTAL HEALTH

What can you do about mental health in your community? May each of us be ever mindful of our divine assignment to be "our brother's keeper."

In the past few years, rivers of ink have flown across reams of paper in a gigantic and successful educational program for "better health in your community." The life span from pediatrics to geriatrics has been covered, and the American people have responded with ever increasing enthusiasm to learn more about caring for their health.

Now comes the appalling realization that mental health is an increasing and hazardous menace to better health. There is much to be done and little known about the prevention and cure of this type of illness.

A doctor's wife is in a strategic position to carry information about the facilities and scientific treatment available to the mentally ill to people in her community. Will you launch a program in your community of education and information on mental health? Many people still consider mental illness a hopeless and shameful disease.

Foster interest in your community to assume responsibility in case-finding and referral. Watch legislation. Take active interest and urge your friends to write to legislators asking them to vote for measures to improve mental health facilities. Legislators are representing you and are eager to carry out your wishes.

Secure a film on mental health from our central office and show it to your Parent-Teacher Association, or to any other organized group which you might deem a good carrier of information.

If you start Operation Mental Health Information in your community, your friends and their friends will carry it on to effective accomplishment. You, your friends, and your neighbors will be carrying on his own assignment of being "his brother's keeper."

MRS. R. T. TRAVIS, Jacksonville,
Chairman, Committee on Mental Health.

SCHOOL OF INSTRUCTION

The annual School of Instruction of the Woman's Auxiliary to the Texas Medical Association was held in the Baker Hotel, Dallas, September 29, with the President, Mrs. Joseph H. McCracken, Jr., Dallas, presiding. Ninety-seven members and guests, including officers, council women, committee chairmen, county presidents, and county presidents-elect were registered.

Preceding dinner an informal visiting hour was given in honor of Mrs. McCracken by the Dallas members of the Executive Board. Mrs. S. M. Hill, Dallas, gave the invocation at dinner. Mrs. McCracken introduced the guests, Dr. Milford O. Rouse, Dallas, President-Elect of the Texas Medical Association; Mrs. Rouse; and C. Lincoln Williston, Austin, Executive Secretary of the Texas Medical Association.

"Understanding Our Public Relations and Legislative Objectives" was the topic of an address by Mr. Williston. He said, "As the chairman of the Board of Trustees, Dr. Robert Kimbro, summarized not too long ago, 'Our most profitable expenditure is the dollar which we allocate to the Woman's Auxiliary for each membership in the Texas Medical Association.'"

Mr. Williston urged that the Auxiliary continue to stress the responsibility of each doctor's wife to win friends for medicine in her everyday contacts. He reminded that members of the Auxiliary have a responsibility to put certain facts before the laity. The public should know that wages have risen much faster than medical care prices, and that almost all wage earners put in less work today than ever before to pay for the same amount of medical care; that doctors' fees have not gone up nearly half as much as other family expenses; and that the average American family is spending only 4 cents out of every $1 for medical care, which is the same percentage spent for medical care 20 years ago.

Sponsorship of appropriate exhibits at county fairs, distribution of booklets detailing medicine's message, scheduling of films presenting the doctor's viewpoint at organizations, promotion of voluntary health insurance programs —all designed to emphasize the advantages of private medical care—add up to good public relations, Mr. Williston suggested.

Some rural areas are in need of a physician but experience has shown that wives of young physicians may be reluctant to settle in these communities. Mr. Williston asked that if a town is seeking a doctor, the woman's auxiliary appoint a committee to welcome wives of physicians who may be interested in practicing there.

Mr. Williston then outlined the legislative picture for Auxiliary members.

Mrs. McCracken presented Mrs. John D. Gleckler, Denison, chairman of the School of Instruction, who with her co-chairman, Mrs. Emmett Essin, Jr., Sherman, had arranged this part of the program. Mrs. Gleckler introduced the "faculty," consisting of officers and committee chairman, each of whom explained the aims and activities of her particular project.

First Vice-President and Chairman of Organization and Members, Mrs. Harold Lindley, Pecos, conducted the first "class." The organization program aims to establish new auxiliaries in counties where medical societies exist, but no auxiliary; to enroll new members and strengthen the structure in unorganized counties; and to increase the number of members-at-large in all unorganized counties. To hold the interest of new members, it was suggested that they be given a choice when they are placed on committees. Prospective members from unorganized counties and wives of hospital resident physicians and interns should be invited to especially interesting meetings. The auxiliary should arrange for members to bring new members to meetings to make them feel at home and place in the hands of new members a brief history of the Auxiliary, giving its aim, ideals, projects, and functions. It should give new members something to do in the auxiliary immediately, and then follow up with another job, however small; make each new member realize the auxiliary has faith in her ability to execute any task assigned her and keep interference at a minimum; encourage members to identify themselves as individuals with the many health organizations which most communities support; and encourage meetings in which the auxiliary members and their husbands and children can participate.

Officers of the Woman's Auxiliary to Texas Medical Association: President, Mrs. Joseph H. McCracken, Jr., Dallas; President-Elect, Mrs. R. C. Bellamy, Liberty; First Vice-President, Mrs. Harold Lindley, Pecos; Second Vice-President, Mrs. William C. Barksdale, Borger; Third Vice-President, Mrs. Scott H. Martin, San Angelo; Fourth Vice-President, Mrs. L. L. D. Tuttle, Houston; Fifth Vice-President, Mrs. John C. Parsons, San Antonio; Treasurer, Mrs. J. C. Terrell, Stephenville; Recording Secretary, Mrs. Franklin Campbell, Fort Worth; Corresponding Secretary, Mrs. O. M. Marchman, Jr., Dallas; Publicity Secretary, Mrs. Joe Thorne Gilbert, Austin; Parliamentarian, Mrs. O. W. Robinson, Paris.

"Our growth in stature has been due to the guidance of the medical societies," said Mrs. Lindley. "An invitation to the president of the county society to attend the first meeting of the auxiliary for the year will give him an opportunity to outline his plans. We gain the greatest respect from our husbands when we remember that ours is an auxiliary to a medical society, and not just another woman's club."

Mrs. Lindley introduced the council women and county presidents in attendance.

Three Past-Presidents were presented by Mrs. Gleckler and the members were urged to ask them questions. They were Mrs. Mark H. Latimer, Houston; Mrs. E. W. Coyle, San Antonio; and Mrs. O. W. Robinson, Paris.

Mrs. Charles E. Cornwell, Marlin, Program Chairman, outlined program suggestions which included one program each year along medical lines; the use of films available without charge from the central office in Austin; emphasis on rural health in rural auxiliaries; a program on legislation and public relations early in the year; time for the *Bulletin* and *Today's Health;* and observance of Doctor's Day. It was emphasized that approval from the medical society should be obtained for any proposed plans or projects.

Mrs. Howard E. Puckett, Amarillo, Civil Defense Chairman, proposed a positive step in civil defense—the use of identification tags, which the Potter Auxiliary proved to be a worth-while project.

Mental Health Chairman, Mrs. R. T. Travis, Jacksonville, pointed out the challenge in this field and suggested the use of films for lay audiences, visits to mental hospitals to help patients, and programs to dramatize the possibilities of improved mental health conditions.

"The nurse recruitment program is our business," Mrs. William D. Nicholson, Freeport, Chairman of Nurse Recruitment, announced and listed the assets and liabilities of such a program. The "1955-1956 program will be valuable to us and our community in relation to the amount of time, money, and effort given this part of our Auxiliary work," she added.

"Our goal is to make the observance of Doctor's Day, March 30, 100 per cent in county auxiliaries. . . . A contribution to the American Medical Education Foundation, placing of books written by doctors in schools and libraries, establishing scholarships in honor of doctors, furnishing a hospital room, and planning social events to honor doctors are in keeping with the meaning of Doctor's Day," said Mrs. Cecil O. Patterson, Dallas, Chairman of Doctor's Day.

"Styles change in legislation," Mrs. A. B. Pumphrey, Fort Worth, Past-President, remarked. "Our doctors call upon us to help and we can assist them in our own feminine fashion. . . . The new look in legislation demands that the legislative suit should fit the members of our Auxiliary, and that the fur muff we must have to go with the suit does not have any brickbats in that muff," was her final analysis.

Mrs. Ridings E. Lee, Dallas, Council Woman, discussed the national movement to conquer the ever-mounting problem of mental health. "It is appalling to know that today's tensions can become so monstrous, that healthy citizens burdened to the point of despair sometimes plead to be placed in mental institutions to find relief from their overwhelming responsibilities," she reported.

"A brochure designed to become a simplified public relations tool has been adopted by the Auxiliary," Public Relations Chairman, Mrs. Howard T. Dudgeon, Jr., Waco, announced. Excellent results have been obtained from medical booths and displays at county fairs. Auxiliaries in the areas in which fairs are to be located have been urged to plan for a booth. Reports of public relations programs by various auxiliaries were outlined.

Membership and Auxiliary funds were discussed by Mrs. J. C. Terrell, Stephenville, Treasurer. Active and honorary memberships were defined and Mrs. Terrell told of special conditions regarding membership of wives of doctors in the armed services and the wives of residents and interns.

A reprint from the TEXAS STATE JOURNAL OF MEDICINE, listing certain volumes needed for the Texas Medical Association Library, was distributed by Mrs. Allan Shields, Victoria, Library Chairman. She announced that the library of the late Dr. Joseph H. McCracken, Sr., Mineral Wells, and medical journals and books collected by the late Dr. F. F. Kirby, Waco, had been presented the Library.

"The Memorial Fund is a trust fund to render financial assistance to widows or dependents of physicians in good standing with their county medical societies at the time of their death," Mrs. J. Guy Jones, Dallas, Memorial Fund Chairman, explained. The fund is increased by the interest it draws and from gifts. Donations are made to the fund instead of sending flowers for funeral services. In such cases, the committee sends an engraved card to the family of the deceased, explaining the donation to the fund. The names of the beneficiaries of the Memorial Fund are never divulged publicly. If the Memorial Fund Committee cannot contribute enough to meet a widow's needs, it enlists outside aid.

The Student Loan Fund was described by the Chairman, Mrs. J. Charles Dickson, Houston, "Only Texans who are juniors and seniors in medical school are granted loans. An applicant must secure recommendations from his minister, the dean of his medical school, and a friend. The student must give reasons for requesting a loan, after which he is interviewed by a member of the committee. If a loan is granted, the check is sent to the dean. It is stipulated that no more than seven or eight loans may be made in any one year," Mrs. Dickson noted.

"Medical schools graduate from 600 to 1,000 more doctors annually than were graduated ten years ago, and the cost of educating each one has increased 165 per cent during the last 20 years," Mrs. W. Frank Armstrong, Fort Worth, Chairman of the American Medical Education Foundation Committee, reported. "Our goal this year is $1 for each of the Auxiliary members in Texas," she continued. "In addition, each county auxiliary should have a definite plan for raising funds for AMEF."

Mrs. Speight Jenkins, Dallas, former AMEF Chairman, commented on the use of AMEF funds. The funds are unrestricted except that they must not be used for buildings.

News Letter Editor, Mrs. F. Paul Burow, Killeen, invited news from both small and large auxiliaries.

Increased subscriptions to the *Bulletin* were sought by Mrs. H. O. Padgett, Marshall, Chairman, and Mrs. R. C. Bellamy, Liberty, President-Elect and former *Bulletin* Chairman.

Mrs. Charles L. Gary, Corsicana, *Today's Health* Chairman, suggested methods of increasing subscriptions. Profit-sharing ideas were presented to auxiliaries whereby other organizations may sell *Today's Health* and keep money for their projects.

The importance of TEXAS STATE JOURNAL OF MEDICINE space assigned the Auxiliary was stressed by Mrs. Joe Thorne Gilbert, Austin, Publicity Secretary. "The JOURNAL often stays in our husbands' offices and it is their one source of information as to what the Auxiliary is doing. To define our work, an outline of projects has been made and chairmen have been requested to write of their plans for the JOURNAL," Mrs. Gilbert said.

Representing the office in Austin, Miss Hazel Casler, Executive Secretary, asked that county presidents make hand-

books available to program chairmen as a source of information. She also requested the names of new members, to add to the mailing list to receive information rather than wait until the Treasurer's report is received in 1956.

Mrs. McCracken thanked those in attendance and invited them to the Executive Board meeting to be held the next morning.

EXECUTIVE BOARD MEETING

Action taken by the Woman's Auxiliary to the Texas Medical Association at its Executive Board meeting in Dallas, September 30, included the vote to adopt a charter for the Auxiliary; the appointment of C. Lincoln Williston, Austin, Executive Secretary of the Texas Medical Association, to serve in an advisory capacity to the Scholarship Fund Committee of the Auxiliary; and the approval of a $65 expenditure for reprinting a directory of the Texas Schools of Nursing.

The meeting was called to order by Mrs. Joseph H. McCracken, Jr., Dallas, President. The invocation was given by Mrs. H. Leslie Moore, Dallas, Honorary Life Member.

Mrs. Warren A. Shoecraft, president of the Dallas County Auxiliary, welcomed members and the response was given by Mrs. Joe Nichols, Atlanta.

Mrs. A. B. Pumphrey, Fort Worth, Past President, introduced the past state presidents who were in attendance. These included Mesdames Mark H. Latimer, Houston; E. W. Coyle, San Antonio; O. W. Robinson, Paris; S. M. Hill, Dallas; Joseph B. Foster, Houston; William Hibbitts, Texarkana; S. F. Harrington, Dallas; W. R. Thompson, Fort Worth; F. F. Kirby, Waco; G. V. Brindley, Sr., Temple; and O. M. Marchman, Sr., Dallas. Messages were received from several who were unable to attend.

Mrs. George Turner, past president of the American and Texas Medical Associations' Auxiliaries, sent a letter thanking the Auxiliary for the gold charm for her bracelet which was presented to her in Atlantic City.

The officers, council women, and committee chairmen were introduced and reported on the progress being made.

An invitation was issued to attend the 1956 convention to be held in Galveston, April 21-25, with headquarters at the Jack Tar Hotel.

Mrs. William D. Nicholson asked the auxiliaries to send girls to the Future Nurses Convention to be held in Dallas, March 24. It was also suggested that auxiliaries invite a doctor to serve on committees for Future Nurses Clubs.

Awards from the AMA and the Auxiliary to the AMA for the work accomplished in Texas for the AMEF fund were presented by Mrs. McCracken to Mrs. W. F. Armstrong, Fort Worth, in the absence of Mrs. J. L. Jinkins, Galveston, who was chairman of the Committee on American Medical Education Foundation last year.

Council women and county presidents and presidents-elect were introduced and each reported on her program.

Mrs. Collier Rucker, Jacksonville, chairman of Courtesy Resolutions, expressed the appreciation of the Auxiliary to everyone who made possible the successful meeting.

Luncheon was served in the Baker Hotel Mural Room following the adjournment of the meeting.

DEATHS

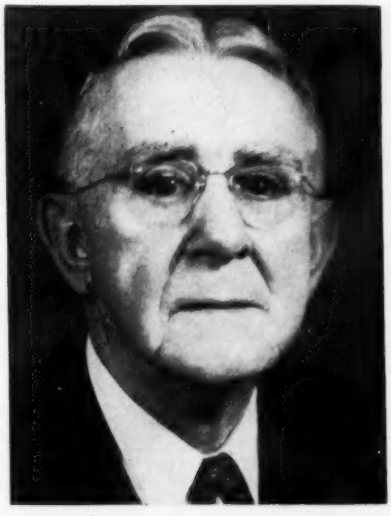
M. C. OVERTON

Dr. Marvin Cartmell Overton, active practitioner in Lubbock, Texas, for 54 years and father of Dr. M. C. Overton, Jr., Pampa surgeon, and Philip R. Overton, Austin attorney and general counsel of the Texas Medical Association, died at his home September 1, 1955, of panmyelosis with fibrosis.

The son of the Rev. George Buck and Susan Louisa (Lawson) Overton, Dr. Overton was born June 13, 1878, in Morganfield, Ky. He grew up in Louisville where he worked on a newspaper and with the telephone company before deciding to study medicine. His medical degree was obtained in 1901 from the University of Louisville. Opening his general practice in Lubbock after hearing a classmate tell of the scarcity of physicians in West Texas, Dr. Overton ministered to a large area of the state, operating his own drug store for a time and performing the first appendectomy in the city. In more recent years Dr. Overton had specialized in pediatrics, being author of a book entitled "Your Baby and Child." He was one of the owners of Krueger, Hutchinson and Overton Clinic, which was transferred to Methodist ownership last year, and had retired in June because of ill health.

A member of the Texas and American Medical Associations through Lubbock-Crosby Counties Medical Society throughout his professional career, Dr. Overton was named to honorary membership in the state organization in 1950. He was a member of the American Academy of Pediatrics and a diplomate of the American Board of Pediatrics.

Dr. Overton aided in development of the first hospital in Lubbock, served as president of the First National Bank there for one year, was an alderman during construction of the first sewer system, and was a member of the school board when the first brick building, old Central Ward School, was erected. He was on the official board of the First Methodist Church throughout his residence in Lubbock. He and Mrs. Overton paid for construction and furnishing of the Methodist Student Center; he established a loan fund at McMurry College in Abilene which has assisted more than 200 students; and he contributed to other



DR. M. C. OVERTON

Methodist institutions. For years he gave annual $200 scholarships to the Texas Technological College athletic department for the athlete exercising the greatest influence toward good morale of the football team. He also gave scholarships in the speech department at Texas Tech. He long was a member of the Rotary Club loan fund committee and held honorary membership in the club after many years of perfect attendance as a regular member. Dr. Overton also belonged to the Masonic Lodge, Commandery, and Shrine.

Evidence of Dr. Overton's civic activities in Lubbock are the following bearing his name: M. C. Overton Elementary School, Overton Tower of the First Methodist Church, Overton Addition (the first subdivision to Lubbock and developed by Dr. Overton), and Overton Methodist Church (the site for which was donated by the doctor in his subdivision).

Dr. Overton and Miss Georgia Robertson of Louisville were married in 1902. Sons Marvin, Philip, Robert, and George Buck were born to this union. Mrs. Overton died in 1916 and George Buck Overton in 1923. Dr. Overton married Miss Nannie M. Jennings of Lubbock in 1918, and two daughters were born to them. Surviving Dr. Overton are his wife; three sons, Dr. Overton, Jr., Philip R. Overton, and Robert Overton of Brownsville; two daughters, Mrs. William T. West and Mrs. Watson Carlock, both of Lubbock; three sisters, Mrs. Edward Hill, Miss Mary B. Overton, and Miss Sue L. Overton, all of Dallas; and 12 grandchildren. One grandson, Dr. Philip Marvin Overton, received his degree in medicine in June and is interning at Parkland Hospital, Dallas; two other grandsons are taking premedical courses in college.

Family and friends have established the Overton Memorial Fund for Needy Children, which will be a trust administered by trustees of the Methodist Hospital, Lubbock, for hospital care of needy children regardless of race or creed.

P. L. VARDY

Dr. Phillip Lee Vardy, Estelline, Texas, died on August 30, 1955, in a Childress hospital of a coronary thrombosis.

Dr. Vardy was the son of H. C. and Mary Brain Vardy, and was born on January 8, 1871, near Weatherford. He attended public school in Chico, then worked for several years on a ranch in Hall County. Dr. Vardy entered Washington University School of Medicine at St. Louis, and was graduated from there in 1897, after which he began his practice in Estelline. He was in active practice there for 58 years, taking time out in 1903 and 1910 to do postgraduate work in St. Louis.

DR. PHILLIP L. VARDY

Elected to honorary membership in the Texas Medical Association in 1947, Dr. Vardy had been a member of the Armstrong-Donley-Childress-Collingsworth-Hall Counties Medical Society since 1908, and was president of his society in 1942. He also was a member of the American Medical Association and was the physician for the Fort Worth and Denver Railroad for many years.

He was a member of the Masonic Lodge and the Order of the Eastern Star in Estelline, and of the Memphis Chapter and Council and Commandery. He also was a member of the Lions Club and the Estelline Methodist Church, for which he was secretary and treasurer more than 40 years.

Miss Mary Eddins of Chico and Dr. Vardy were married on October 11, 1899, in Chico. Mrs. Vardy survives as do four children, Phillip Lee Vardy, Jr., Slaton; James DeWitt Vardy, Turkey; Mrs. W. C. Gilmore, Slaton; and Mrs. Morris Currin, Fort Worth, and four grandchildren. A third son, Robert Winston Vardy, preceded his father in death.

L. H. MOORE

Dr. Loyal Hamilton Moore died in a local hospital in McAllen, Texas, on July 8, 1955, of coronary thrombosis.

Dr. Moore was the son of James G. and Samantha Moore, and was born on October 25, 1883, in Venice, Pa. He attended the Jefferson Academy in Canonsburg, Pa., and Westminster College in New Wilmington. He then entered the University of Pittsburgh, and completed his medical education at the College of Physicians and Surgeons, Baltimore, in 1910. He practiced 25 years in Canonsburg and Houston, Pa., before coming to Texas and beginning his practice in McAllen. He specialized in diseases of the eye, ear, nose, and throat.

He was a member of the American Medical Association, the Texas Medical Association, and the Hidalgo-Starr Counties Medical Society, of which he was president in 1943. He also was a member of the Masonic Lodge, the Shrine, and the Presbyterian Church.

Miss Blanche Peacock and Dr. Moore were married on October 26, 1911, in Houston, Pa. Mrs. Moore, two children, R. Glen Moore, Elsa, and William Loyal Moore, McAllen, and five grandchildren survive.

L. A. NELSON

Dr. Leo Arthur Nelson, Dallas, Texas, died in a local hospital on August 18, 1955, after a long illness. Dr. Nelson retired from active practice in 1952.

He was born on February 27, 1889, in Chariton, Iowa, and was the son of Mr. and Mrs. Will Nelson. He received his preliminary education in the public schools and at the University of Iowa, Iowa City, which he attended for three years. He then entered the University of Iowa College of Medicine, and was graduated in 1916. Dr. Nelson served his internship and residency at the University Hospital, Iowa City. In 1918, he served with the Army Medical Corps as a first lieutenant at the base hospital in Alexandria, La.

In 1919, Dr. Nelson moved to Texas and began his practice in Sherman, but moved in 1924 to Dallas, where he helped to found the Dallas Medical and Surgical Clinic. He specialized in diseases of the ear, nose, and throat.

Dr. Nelson was a member of the American Medical Association, and in 1953 was elected to honorary membership

DR. L. A. NELSON

in the Texas Medical Association through the Dallas County Medical Society, of which two groups he had been a member since shortly after coming to Texas. He also was a fellow of the American College of Surgeons, a member of the American Academy of Ophthalmology and Otolaryngology, the Dallas Academy of Ophthalmology and Otolaryngology, and the Texas Society of Ophthalmology and Otolaryngology.

Dr. Nelson also was a Knight Templar and a member of the Shrine and the Baptist Church.

Miss Cora Kathryn Beeler and Dr. Nelson were married on August 29, 1917, in Denison, Iowa. Survivors include Mrs. Nelson, one daughter, Mrs. Robert Karper, Dallas, one brother, H. R. Nelson, Corvallis, Ore., and two grandchildren.

R. I. McNEIL

Dr. Robert Irving McNeil, who had practiced medicine in El Paso, Texas, for 42 years, died at his home on August 10, 1955, of carcinoma of the lung.

Dr. McNeil was born at the Elm Hall Plantation in Napoleonville, La., on January 24, 1877. His parents were Edward Benton and Amanda (Kittredge) McNeil. He attended Union University in Jackson, Tenn. Dr. McNeil received his doctor of medicine degree from George Washington University, Washington, D. C., in 1903, and did postgraduate work at the New York Postgraduate School of medicine in 1911. He interned at the Garfield Hospital, Washington. Dr. McNeil was a physician at the Mescalero Indian Reservation until 1907, when he moved to El Paso to begin private practice. In 1919, he entered the United States Public Health Service, and became chief of an El Paso quarantine station in 1930. He was given recognition for his part in bringing under control a smallpox epidemic which threatened the city in 1933, and helped to arrange temporary admission to this country for Mexican citizens who required medical attention in the El Paso hospitals. He retired in 1949 and devoted his time to his home, travels, and writing, and had articles published in medical and historical journals.

Dr. McNeil was a member of the Texas and American Medical Associations through the El Paso County Medical Society, of which he had been a member continuously since 1908. He had been an honorary member of the state organization since 1947. He had served as county health officer and school physician.

He was president of the El Paso Archaeological Society, a life member of the Masonic Lodge, and deacon emeritus in the Baptist Church.

During the Spanish-American War, Dr. McNeil served in the Navy and was stationed in Washington, D. C.

DR. IRVING MCNEIL

Dr. McNeil and Miss Elizabeth Keeling were married on June 10, 1908, in Washington. Mrs. McNeil survives as do three children, Irving McNeil, Jr., El Morro, N. Mex.; Mrs. John A. Ferguson, El Paso; and Mrs. Robert E. Garren, Auburn, Ala.

A. H. ALSUP

Dr. Ace Hill Alsup, Temple, Texas, died in his office on August 16, 1955, of a heart attack.

Dr. Alsup was born in Wilson County, Tenn., and moved to Texas with his parents, Mr. and Mrs. J. F. Alsup, when he was a small child. He attended the Wedemeyer Academy in Belton, then entered the University of Texas Medical Branch. He completed his medical education at the Memphis Hospital Medical College, and was valedictorian of his class of 1908.

After practicing briefly in Franklin, Dr. Alsup moved in 1910 to Little River where he practiced until 1928. He then located in Temple and became a staff member of the King's Daughters Hospital.

Dr. Alsup had been a member of the Texas Medical Association through the Bell County Medical Society continuously since 1910. He also was a member of the Texas Railway and Traumatic Surgical Association, and was the local physician for the Missouri, Kansas, and Texas Railroad. He was the examining physician for Selective Service from 1940 until 1946 and during 1954 and 1955. He was a member of the Masonic Lodge and the Baptist Church.

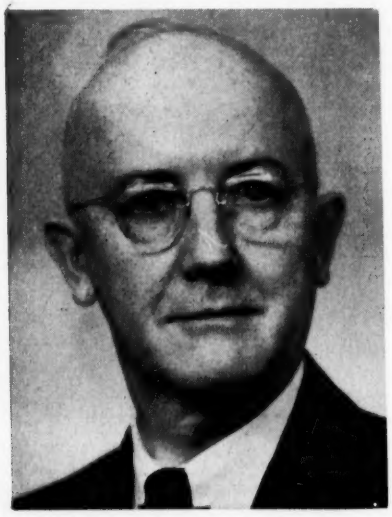
On November 12, 1911, Miss Norma Blaylock and Dr. Alsup were married in Heidenheimer.

Survivors include Mrs. Alsup; a son, Ace Hill Alsup, Jr., Temple; a daughter, Mrs. Jasper H. Arnold, Houston; three sisters, Mrs. Henry Taylor and Mrs. Slade Yarrell, Temple, and Mrs. Susan Furnace, Manville; and five grandchildren.

W. A. FORD

Dr. Walter Ari Ford, Houston, Texas, died en route to a local hospital on July 12, 1955, of a heart attack.

Dr. Ford was born on July 26, 1887, in Sonestown, Pa., and was the son of Pierce and Rose Emery Ford. He attended Hyde Park high school in Chicago, and in 1906 he entered the University of Chicago for his premedical training. In 1912, Dr. Ford was graduated from the Loyola University College of Medicine. He interned in the United States Steel Hospital, Gary, Ind., and served his residency



DR. WALTER A. FORD

from 1919 until 1922 in the University of Illinois Eye and Ear Hospital, Chicago. Dr. Ford was appointed chief of the eye, ear, nose, and throat service in the Memorial and St. Joseph's hospitals in Sheboygan, Wis., and held these positions for 15 years. He also was a preceptor for the University of Wisconsin Medical School. After practicing two years in Aurora, Ill., and 18 years in Sheboygan, Dr. Ford came to Texas and began his Houston practice in 1945.

A member of the Texas and American Medical Associations through the Harris County Medical Society, Dr. Ford also was a member of the Association of American Physicians and Surgeons and of the Houston Ophthalmological and Otolaryngological Society. He was a clinical assistant professor of otolaryngology at the Baylor University College of Medicine from 1944 until the time of his death. Dr. Ford's medical fraternity was Phi Chi. He was among the first doctors to do research on the use of radium in postoperative care of polyps.

He also was a member of Kappa Sigma social fraternity, the Houston Doctors' Club, the Briar Club, the Knife and Fork Club, the American Legion, the Masonic Lodge, and the Methodist Church.

Dr. Ford was a veteran of both world wars. He served with the Army medical corps in Europe during World War I, and was chief of the E.E.N.T. service at Camp Wolters, Fort Bliss, and Camp Hood during World War II. He was a medical reservist for 30 years, and retired in 1944 as a lieutenant colonel.

On June 15, 1921, he was married to Miss Marietta Walsh in Mondovi, Wis. Mrs. Ford and three sons, Douglas Walsh Ford, Walter Alan Ford, both of Houston, and Dr. Donald Pierce Ford, who is serving his residency in ophthalmology in New Orleans, survive.

A. MILEAU, JR.

Dr. Alexander Mileau, Jr., retired Army surgeon, died on July 4, 1955, in the Brooke General Hospital, San Antonio, Texas, of a heart disease.

Dr. Mileau, a native of Cornwall, Ontario, was born February 1, 1890, and was the son of Marie Louise (Dupuis) and Alexandre Mileau. He attended grammar and high schools in Lewiston, Maine, and received his medical education at the Tufts Medical College, Boston, from which he was graduated in 1916. After interning in the Children's Hospital, New York, Dr. Mileau was commissioned in the Army Medical Corps and served overseas during World War I with the First Division. After the war, he attended several service schools including Flight Surgeon's School and Army Medical School, for two years, and in 1922 was appointed post surgeon of the Aberdeen Proving Grounds, Md. Four years later, Dr. Mileau was transferred to Brooks Field, San Antonio, where he was post surgeon, and in 1930 he received an appointment as senior flight surgeon, Philippine Department, Philippine Islands. He was also a rated pilot. He returned to Texas in 1933 as post surgeon for Fort Crockett, Galveston, and later was stationed briefly in Fort Sam Houston with the obstetrical and orthopedic services. He retired with the rank of major in September, 1934.

Dr. Mileau became superintendent of the Robert B. Green Hospital, San Antonio, in 1938, a position which he held until 1944 when he began his private practice.

He was a member of the Bexar County Medical Society, the Texas Medical Association, the American Medical Association, and Phi Chi medical fraternity. He also was a member of the American Legion and the Veterans of Foreign Wars.

Dr. Mileau was married on October 8, 1917, in New York, and is survived by his wife, the former Miss Louise M. Reynolds of Mount Savage, Md., and three daughters, Mrs. Marie Louise Seeburger, Mexico City; Miss Janet E. Mileau and Mrs. Joan D. Jacobs, both of San Antonio.

DR. ALEXANDER MILEAU, JR.

D. L. SPRINKLE

Dr. Davis Lee Sprinkle, Dallas, Texas, died in a local hospital on August 27, 1955, of a heart ailment.

He was born on August 18, 1890, near Temple, and was the son of Mr. and Mrs. Martin F. Sprinkle. After attending public schools in Lone Star and Kaufman, Dr. Sprinkle entered North Texas State Normal College, where he attended two years before enrolling in the Baylor College of Pharmacology, Dallas. He was graduated in 1918. Seven years later, he returned to school for a year of premedical studies at Baylor University, Waco, before entering the Baylor University College of Medicine, Dallas, from which he received his doctor of medicine degree in 1930.

Dr. Sprinkle interned at the Morningside Hospital, Tulsa, and the Tampa Municipal Hospital, Tampa, Fla. Beginning his medical career as a general practitioner in Mabank, Dr. Sprinkle remained there five years. He then served his residency in radiology at the University Hospital, Baltimore, in 1937 and 1938, and later became a radiologist at the Veterans Administration Hospital, Fort Howard. In 1938, he went to Tampa as superintendent and radiologist of the Tampa Memorial Hospital. He then practiced briefly in Pineville, La., and in 1942 he moved to McAlester, Okla., where he was radiologist for the Albert Pike and St. Mary's Hospitals and carried on a private practice in his specialty. Dr. Sprinkle returned to Texas in 1944 and opened a private office in Harlingen, where he continued to practice, specializing in radiology. He remained in Harlingen for seven years before moving in 1952 to Dallas, where he was in active practice at the time of his death.

Dr. Sprinkle had been a member of the Texas Medical Association consecutively through the Kaufman, Cameron-Willacy, Erath-Hood-Somervell, and Dallas Counties Medical Societies. He was president of the Kaufman County Society in 1933. His membership in other medical organizations included the American Medical Association, the Radiological Society of North America, and the Texas Radiological Society. During World War I, Dr. Sprinkle served in the naval medical corps, and was in the medical reserve for 10 years.

DR. D. L. SPRINKLE

He was a member of the Masonic Lodge, the Shrine, the Lions Club, and the Kiwanis Club.

Miss Elsie Pearl Caldwell and Dr. Sprinkle were married on April 12, 1914. Survivors are Mrs. Sprinkle and two brothers, Joe and Henry Sprinkle, both of Kaufman.

W. D. PETIT

Dr. William Daugherty Petit, Presidio, Texas, died in an El Paso hospital on July 17, 1955, of pulmonary infarction due to pulmonary venous thrombosis.

DR. WILLIAM D. PETIT

Dr. Petit was born on October 9, 1883, in Joplin, Mo., and was the son of Dr. Julius C. Petit and Esther Ann Archer Petit. He was graduated from Kansas State University in 1908, and entered Washington University Medical School, St. Louis. He received his doctor of medicine degree with high honors in 1911, and interned at the St. Louis City Hospital. He was appointed house surgeon at the Missouri Pacific Hospital, St. Louis, and held this position for two years. In 1915, Dr. Petit joined the Army Medical Corps as a first lieutenant and served overseas during World War I. He had attained the rank of major when he was honorably discharged in 1922. He later was promoted to lieutenant colonel in the medical reserve corps.

In 1924, Dr. Petit entered private practice in Thorndale, and joined the Civilian Conservation Corps in 1934 as a medical officer. He moved to Presidio in 1942 and had a private practice until the time of his death. In addition, he was an officer with the United States Public Health Service in Presidio. Dr. Petit took time out during his medical career to do postgraduate work in Vienna and at Tulane University Medical School, New Orleans.

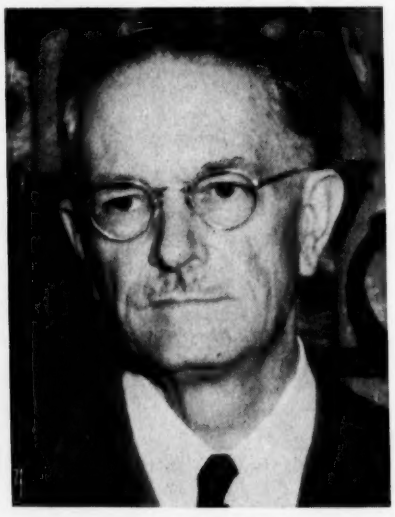
Dr. Petit was an honorary member of the Texas Medical Association through the Pecos-Jeff Davis-Presidio-Brewster Counties Medical Society, and was a member of the American Medical Association and Phi Beta Pi medical fraternity. He also was a member of the Masonic Lodge and the Episcopal Church.

Miss Inez Hysaw and Dr. Petit were married on March 13, 1916, in Marfa. Survivors are Mrs. Petit, a daughter, Mrs. Jack Hunter, Alexandria, Egypt; and one granddaughter.

A. E. MOON

Dr. Arthur Ernest Moon, who spent his entire professional life in Temple, Texas, died at his home on July 27, 1955, of a heart attack.

Dr. Moon was born on March 5, 1890, in Lineville, Ala.; attended Howard College, Birmingham; and was graduated from Baylor University, Waco, in 1915. He received his doctor of medicine degree from the University of Texas Medical Branch, Galveston, in 1920 and became an intern at the Scott and White Memorial Hospitals, where he later became a resident doctor, then a permanent member of the hospital staff specializing in internal medicine. He had retired only last April 1. Dr. Moon was a member of the Texas and American Medical Associations through the Bell County Medical Society, of which he was president in 1942. He also was a fellow of the American College of Physicians and a member of the Texas Club of Internists, the Southern Medical Association, and Alpha Omega Alpha, honorary medical fraternity. He was a senior consultant at the University of Texas Postgraduate School of Medicine in Temple, and was an instructor in the Scott and White School of Nursing from 1925 until 1935. He also was a member of the Baptist Church.



DR. A. E. MOON

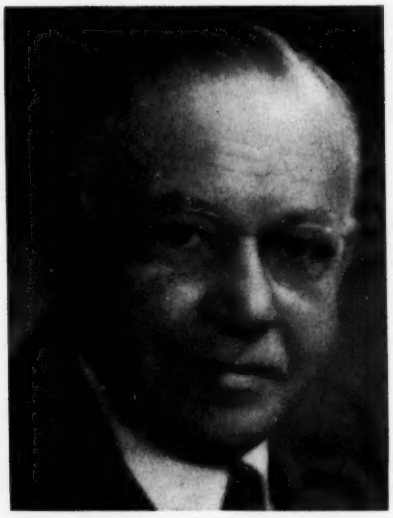
Miss Flora Wells and Dr. Moon were married on June 15, 1920. Their son, Dr. Arthur Ernest Moon, Jr., died in an automobile accident in January, 1952. Survivors include Mrs. Moon; two brothers, Dr. A. J. Moon, Liberty, Mo., and David Moon, Fort Worth; four sisters, Mrs. Nora Phillips, Coronado, Calif.; Mrs. P. E. Reeves, Iago; Mrs. J. A. McIver, Fort Worth; and Mrs. James Pritchett, Beaumont; and three grandchildren.

P. R. DENMAN

Dr. Peyton Roland Denman, Houston, Texas, died in a local hospital on August 16, 1955.

He was born near Lufkin on October 10, 1879, and was the son of Dr. A. M. and Mary Caroline (Walker) Denman. After attending the Lufkin public schools and East Texas State College at Commerce, Dr. Denman entered Tulane University College of Medicine, New Orleans, from which he was graduated in 1903. He began his practice in Angelina County soon after his graduation, continuing there until 1911 when he moved to Houston, where he practiced until he retired in 1952.

He was a member of the American Medical Association and the Harris County Medical Society, and was elected in 1952 to honorary membership in the Texas Medical Association, after having been a member almost continuously since 1904. Dr. Denman also was a fellow of the American College of Surgeons and a past president of the Texas Railway and Traumatic Surgical Association. He was a past president of the staff of Memorial Hospital, was a staff member and former executive board member of the Jefferson Davis Hospital, and was on the staff of the Hermann Hospital. Dr. Denman was appointed to the faculty of Baylor College of Medicine in 1944 as Associate Professor of Gynecology (Honorary), and resigned some years later.



DR. PEYTON R. DENMAN

He also was a member of the Baptist Church, the Houston Chamber of Commerce, the Community Chest, the Houston Club, and the Houston Doctors' Club.

During World War I, he was a major in the 137th Field Artillery Medical Corps, serving as regimental surgeon in France.

Dr. Denman was one of 12 out of his graduating class to be honored in 1953 by a special graduation ceremony during which he was awarded a diploma for having served in the field of medicine for 50 years.

After his death, the Houston *Chronicle* paid tribute to him in an editorial, which called attention to his pioneering in the field of spinal anesthesia and invention of the Denman needle to inject the splanchnic nerves of the spine. It also pointed out: "The son of a physician and the father of a physician, Dr. Denman was also the brother of two other physicians. Medicine is a tradition in this family."

Dr. Denman was married to the former Miss Frances Wootters of Crockett on December 5, 1905. Mrs. Denman; two daughters, Mrs. Carlos R. Hamilton and Mrs. Frances Denman Prince; and one son, Dr. Frank R. Denman, all of Houston, survive, as do three brothers, Dr. L. H. Denman, Dr. B. H. Denman, and K. W. Denman, all of Lufkin; three sisters, Mrs. Archie Hucherson and Mrs. Lillian Shands, Lufkin, and Mrs. Nell H. Abram, Houston; and 11 grandchildren.